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ADOLESCENT SELF-REGULATORY AND PSYCHOSOCIAL CAPACITIES:  
A 12-MONTH LONGITUDINAL STUDY OF THE IMPACT ON POSITIVE  
YOUTH DEVELOPMENT

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Thesis submitted to the National University of Ireland, Galway in fulfilment of the  
requirements for the Degree of Doctor of Philosophy (Psychology)

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## Table of Contents

<b>Table of Contents .....</b>	<b>i</b>
<b>Funding .....</b>	<b>vii</b>
<b>Acknowledgments .....</b>	<b>ix</b>
<b>Abstract.....</b>	<b>xi</b>
<b>List of Tables .....</b>	<b>xiii</b>
<b>List of Figures.....</b>	<b>xix</b>
<b>List of Appendices .....</b>	<b>xxiii</b>
<b>List of Abbreviations .....</b>	<b>xxv</b>
<b>Preface.....</b>	<b>1</b>
<b>1. Chapter One .....</b>	<b>6</b>
<b>Introducing Positive Youth Development.....</b>	<b>6</b>
1.1 Chapter Overview.....	6
1.2 Introduction to Adolescence.....	6
1.3 Historical Context of Positive Youth Development.....	14
1.4 Theoretical Foundations of PYD.....	16
1.5 The Construct of Positive Youth Development .....	26
1.6 Conclusions .....	51
<b>2. Chapter Two.....</b>	<b>53</b>
<b>Adolescent Self-Regulation and Positive Youth Development.....</b>	<b>53</b>
2.1 Chapter overview .....	53
2.2 Developmental Systems and Self-Regulation .....	53
2.3 Overview of Self-regulation.....	55
2.4 The Selection, Optimisation and Compensation Model.....	74
2.5 Criticisms of the SOC model.....	80
2.6 Proposing a Model of Adolescent Self-Regulation .....	94
2.7 Outline of Current Research.....	110



<b>3. Chapter Three.....</b>	<b>118</b>
<b>Study 1: Role of Prosocial Values in Adolescent Behaviour .....</b>	<b>118</b>
3.1 Chapter Overview.....	118
3.2 Introduction .....	118
3.3 Study 1A.....	123
3.4 Study 1B .....	131
3.5 Study 1C .....	141
3.6 Overall Discussion of Study 1 .....	154
<b>4. Chapter Four.....</b>	<b>161</b>
<b>Study 2 Methodology .....</b>	<b>161</b>
4.1 Chapter Overview.....	161
4.2 Development of Questionnaires .....	161
4.3 Materials/Measures .....	162
4.4 Pilot Study .....	173
4.5 Research Design for Study 2 .....	175
4.6 Participants .....	177
4.7 Procedure.....	181
4.8 Statistical Analysis .....	183
<b>5. Chapter Five.....</b>	<b>192</b>
<b>Study 2A: Psychometric Properties of the Five Cs Model of PYD.....</b>	<b>192</b>
5.1 Chapter Overview.....	192
5.2 Introduction .....	192
5.3 Method.....	193
5.4 Results .....	195
5.5 Discussion .....	212
<b>6. Chapter 6.....</b>	<b>218</b>
<b>Study 2B: Testing the Adolescent Self-Regulation Model.....</b>	<b>218</b>



6.1	Chapter Overview .....	218
6.2	Introduction .....	218
6.3	Method.....	219
6.4	Results .....	221
6.5	Discussion .....	267
<b>7.</b>	<b>Chapter Seven .....</b>	<b>275</b>
	<b>Study 2C: Analysis of Time One and Time Two Data.....</b>	<b>275</b>
7.1	Chapter Overview .....	275
7.2	Introduction .....	275
7.3	Method.....	280
7.4	Results .....	284
7.5	Discussion .....	317
<b>8.</b>	<b>Chapter 8 .....</b>	<b>325</b>
	<b>General Discussion .....</b>	<b>325</b>
8.1	Chapter Overview .....	325
8.2	Overview of Thesis .....	325
8.3	Limitations.....	342
8.4	Overall Implications .....	346
8.5	Directions for Future Research.....	350
8.6	Conclusion.....	352
	<b>References .....</b>	<b>355</b>
	<b>Appendices .....</b>	<b>399</b>





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## Abstract

Positive youth development refers to a focus on the developmental characteristics that lead to positive outcomes and behaviours among young people (Benson, 2003). The Five Cs Model of PYD (Lerner et al., 2005) is the most empirically supported measure of PYD (Heck & Subramaniam, 2009). However, concerns remain about the indicators used to operationalize the Five Cs PYD Model across adolescence, the manifestation of PYD across age and gender, and the generalizability of PYD measures outside of North America. Furthermore, the role of self-regulation, specifically intentional goal-directed behaviour, operationalised through the SOC model (Freund & Baltes, 2002), has been delineated as the primary mechanism through which PYD occurs (Lerner et al., 2001). However, a number of specific criticisms regarding the role of the SOC model in PYD have been identified, including; 1) relationships between SOC and positive and negative outcomes are weak; and 2) social and emotional aspects of self-regulation are omitted from the SOC model. The primary aims of this thesis were; (1) to assess the psychometric properties of the PYD measure in an Irish context; (2) develop a new measure of prosocial values; and (3) evaluate a new model of adolescent self-regulation and PYD. Using a dual-process model framework, the hypothesised model proposed that prosocial values, resistance to peer influence, emotion regulation, and future orientation are central to adolescent self-regulation and positive development. Analyses using confirmatory factor analyses, reliability analyses, tests of validity (e.g., convergent, known-groups, predictive over 12-months), and multigroup analyses were conducted on the Five Cs measure of PYD, which revealed good psychometric properties in an Irish adolescent sample (N = 672; Males = 387, Females = 284, gender not reported = 1). In addition, Structure Equation Modelling (SEM) was used to test the Adolescent Self-Regulation Model both cross-sectionally and longitudinally over 12-months. Prosocial values, autonomy from peers, and adaptive emotion regulation were identified as significant predictors of positive development. Limitations, theoretical and practical implications of this research, and directions for future research, are outlined.



## List of Tables

<b>Table 1.1</b> <i>Defining Features of Developmental Systems Theories</i> .....	23
<b>Table 1.2</b> <i>Table of Conceptual Models of Positive Development</i> .....	32
<b>Table 1.3</b> <i>Definitions of the 5 C's of Positive Youth Development</i> .....	38
<b>Table 2.1</b> <i>Development of self-representations (Self-reps) and executive functioning (EF) in childhood and adolescence</i> .....	64
<b>Table 2.2</b> <i>Summary of study research questions and objectives</i> .....	115
<b>Table 3.1</b> <i>Mean, standard deviations and sample size for vividness of prosocial and health behavioural images (Study 1A)</i> .....	128
<b>Table 3.2</b> <i>Number and percentage of individuals who endorsed characteristics of image 1 (helping parents with chores) and image 2 (taking part in a youth group)</i> .....	135
<b>Table 3.3</b> <i>Definitions, frequency, synonyms, and antonyms of characteristics of prosocial behaviours</i> .....	137
<b>Table 3.4</b> <i>Mean scores, standard deviations and scale score range for prosocial images</i> .....	148
<b>Table 3.5</b> <i>Factor structure for the combined prosocial image</i> .....	150
<b>Table 3.6</b> <i>Linear regressions of prototype evaluation and prototype similarity on age, gender and prototype factors</i> .....	152
<b>Table 3.7</b> <i>Linear regressions of behavioural willingness on prototype evaluation, prototype similarity, age, gender and prototype image factors</i> .....	154
<b>Table 4.1</b> <i>Characteristics of sample at time 1 by gender, age group and class (N = 672)</i> .....	178
<b>Table 4.2</b> <i>Demographic characteristics of sample at time 1 (N = 672)</i> .....	179
<b>Table 4.3</b> <i>Contextual characteristics of sample at time 1</i> .....	180





<b>Table 4.4</b> <i>Distribution and return rate of consent forms at time 1</i> .....	182
<b>Table 5.1</b> <i>Confirmatory factor analysis of the Five Cs measure of PYD (n = 672)</i> .....	197
<b>Table 5.2</b> <i>Standardised and non-standardised factor loadings (and standard errors) for the five-factor model of PYD</i> .....	198
<b>Table 5.3</b> <i>Descriptive Statistics for all Measures in Study 2A</i> .....	200
<b>Table 5.4</b> <i>Summary of Time 1 intercorrelations for subscales and Total PYD, Contribution, Depression and Risk Scale Scores</i> .....	201
<b>Table 5.5</b> <i>Multiple Hierarchical Regressions for PYD subscale and total scores and positive and negative outcomes</i> .....	204
<b>Table 5.6</b> <i>Means, Standard Deviations, and T-Tests for PYD scale scores and depression</i> .....	206
<b>Table 5.7</b> <i>Tests of Five-factor PYD measure for factorial invariance by gender</i> .....	209
<b>Table 5.8</b> <i>Tests of Five-factor PYD measure for factorial invariance by age group</i> .....	211
<b>Table 6.1</b> <i>Descriptive Statistics for all Measures in Study 2B (N = 672)</i> .....	223
<b>Table 6.2</b> <i>Summary of Correlations for Measures used in Study 2B</i> .....	225
<b>Table 6.3</b> <i>Standardised and unstandardised factor loadings (and standard errors) for the 11-item SOC measure</i> .....	230
<b>Table 6.4</b> <i>Standardised and unstandardised regression weights (with standard errors) for the structural equation model of positive youth development, contribution, risky-behaviours and depression using time 1 data</i> .....	246
<b>Table 6.5</b> <i>Fit indices of Mediation Models for effects on positive youth development via SOC at time 1</i> .....	252



<b>Table 6.6</b> <i>Fit indices of Mediation Models for effects on depression via SOC at time 1</i> .....	253
<b>Table 6.7</b> <i>Tests of the structural invariance of the adolescent self-regulation model by gender</i> .....	259
<b>Table 6.8</b> <i>Tests of the structural invariance of the adolescent self-regulation model by age groups</i> .....	263
<b>Table 7.1</b> <i>Summary of Time 1 predictor and Time 2 outcome correlations (N = 327)</i> .....	286
<b>Table 7.2</b> <i>Fit indices for structural equation models for Time 1 PYD predicting Time 2 contribution, depression, and risky behaviours (N = 327)</i> .....	293
<b>Table 7.3</b> <i>Standardised and unstandardised regression weights (with standard errors) for the structural equation model of time 1 PYD scores on time 2 outcomes</i> .....	295
<b>Table 7.4</b> <i>Descriptive Statistics for time 1 and time 2 measures in Study 2C</i> .....	299
<b>Table 7.5</b> <i>Standardised and unstandardised regression weights (with standard errors) for the structural equation model of time 1 predictors and positive youth development, contribution, risky-behaviours and depression scores at time 2</i> .....	303
<b>Table 7.6</b> <i>Summary of Spearman Rank –Order Correlation Coefficients between the 5Cs and Total PYD scores at time 1 and time 2</i> .....	308
<b>Table 7.7</b> <i>Frequency and proportion of males and females according to cluster group</i> .....	311
<b>Table 7.8</b> <i>Cluster group means and standard deviations (in parenthesis) for key time 1 and time 2 characteristics, and pairwise comparisons between cluster groups</i> .....	314
<b>Table 8.1</b> <i>Summary of study research questions and objectives</i> .....	327



## List of Figures

<b>Figure 1.1</b> <i>Bronfenbrenner's Social Ecology Model</i> .....	18
<b>Figure 1.2</b> <i>Cross-section of dynamic interactions between individual and context</i> .....	19
<b>Figure 1.3</b> <i>5Cs Model of Positive youth Development (Lerner et al., 2005)</i> .....	50
<b>Figure 2.1</b> <i>Graphical depiction of the influence of intentional self-regulations on individual-context relations</i> .....	55
<b>Figure 2.2</b> <i>Examples of organismic &amp; intentional components of self-regulation</i> .....	57
<b>Figure 2.3</b> <i>Development cycles of levels and tiers of skills</i> .....	67
<b>Figure 2.4</b> <i>Cyclical spurts for cognitive development under optimal conditions (Fischer, 2008)</i> .....	67
<b>Figure 2.5</b> <i>Illustration of the relationship between self-representations, executive functioning and self-regulation</i> .....	71
<b>Figure 2.6</b> <i>Social-reactive and goal-directed pathways to self-regulations</i> .....	95
<b>Figure 2.7</b> <i>Hypothesised relationship of prosocial values, resistance to peer influence, emotion regulation and future orientation on self-regulation (SOC) and as an influencing factor on PYD, Contribution, Risky-Behaviours, and Depression</i> .....	109
<b>Figure 3.1</b> <i>The Social Reaction Path of the Prototype/Willingness Model</i> .....	142
<b>Figure 5.1</b> <i>Final 5Cs Model of Positive Youth Development</i> .....	217
<b>Figure 6.1</b> <i>Final 11-item three-factor SOC model with standardised factor loadings and covariances using time 1 data</i> .....	228
<b>Figure 6.2</b> <i>Direct and indirect effects of prosocial prototype, RPI, emotion regulation, and future orientation on self-regulation (SOC) and as an influencing factor on PYD, Contribution, Risky Behaviours, and Depression</i> .....	242



<b>Figure 6.3</b> <i>Significant direct and indirect effects of prosocial prototype, resistance to peer influence, emotion regulation, and future orientation on self-regulation (SOC) and as an influencing factor on PYD, Contribution, Risky Behaviours, and Depression.....</i>	250
<b>Figure 6.4</b> <i>Standardised parameter estimates for boys and girls.....</i>	260
<b>Figure 6.5</b> <i>Standardised parameter estimates for younger and older adolescents.....</i>	264
<b>Figure 7.1</b> <i>Structural Model of the relationship between Time 1PYD and Time 2 positive and negative outcomes with standardised ML estimates.....</i>	290
<b>Figure 7.2</b> <i>Standardised regression weights for the structural equation model of time 1 predictors of future orientation, emotion regulation, prosocial values, resistance to peer influence and SOC as an influencing factor on time 2 Contribution, PYD, Risky-Behaviours and Depression.....</i>	306
<b>Figure 7.3</b> <i>A four-cluster solution for typical PYD development groups over 12-months.....</i>	310





## List of Appendices

<b>Appendix A</b> <i>Letter of Recruitment (Study 1A and Study 1B)</i> .....	399
<b>Appendix B</b> <i>Information Sheet (Study 1A &amp; Study 1B)</i> .....	400
<b>Appendix C</b> <i>Consent (Study 1A, Study 1B, Study 1C)</i> .....	402
<b>Appendix D</b> <i>Questionnaire (Study 1A)</i> .....	404
<b>Appendix E</b> <i>Questionnaire (Study 1B)</i> .....	407
<b>Appendix F</b> <i>Questionnaire (Study 1C)</i> .....	408
<b>Appendix G</b> <i>Letter of Invitation (Study 2)</i> .....	411
<b>Appendix H</b> <i>Information Sheet (Study 2)</i> .....	413
<b>Appendix I</b> <i>Consent forms (Study 2)</i> .....	416
<b>Appendix J</b> <i>Parental Questionnaire (Study 2)</i> .....	419
<b>Appendix K</b> <i>Individual Questionnaire (Study 2)</i> .....	420
<b>Appendix L</b> <i>Boys only table and graph of SEM model</i> .....	441
<b>Appendix M</b> <i>Girls only table and graph of SEM model</i> .....	445
<b>Appendix N</b> <i>Younger adolescents only table and graph of SEM model</i> .....	449
<b>Appendix O</b> <i>Older adolescents only table and graph of SEM model</i> .....	453
<b>Appendix P</b> <i>Summary of standardised regression weights for SEM pathways for overall sample, longitudinal sample, gender and age-specific models</i> .....	457
<b>Appendix Q</b> <i>Breakdown of number and percentage of students per year in Irish Post-Secondary schools by National figures, by studies, and by gender</i> .....	462



### List of Abbreviations

CFA	Confirmatory Factor Analysis
DA	Depressed Affect
ED	External Dysfunctional Emotion Regulation
EF	External Functional Emotion Regulation
EFA	Exploratory Factor Analysis
EM	Estimation Maximisation
FOI	Future Orientation Inventory
ID	Internal Dysfunctional Emotion Regulation
IF	Internal Functional Emotion Regulation
IP	Interpersonal Problems
ISR	Intentional Self-Regulation
MAR	Missing at Random
MCAR	Missing Completely at Random
NMAR	Not Missing at Random
PA	Positive Affect
PYD	Positive Youth Development
REQ	Regulation of Emotions Questionnaire
RPI	Resistance to Peer Influence
SC	Somatic Complaints
SEM	Structural Equation Modelling
SOC	Selection, Optimisation and Compensation
TAP	Teen Assessment Project Survey Question Bank



## Preface

Adolescence is a period of human life that has fascinated social scientists. All cultures distinguish between young people and adults, with adolescence described by many cultures as a period of preparation for adulthood (Crockett, 1997). During this period defined by remarkable physical, cognitive, emotional, and social changes, one makes the fundamental move from child to adult. In the preface to his seminal work on Adolescence, Granville Stanley Hall described adolescence as the period where “youth awakes to a new world and understands neither it nor himself” (Hall, 1904, p. xv). Researchers from a variety of perspectives such as developmental psychology, social care, social work, education, sociology and youth work have all focused on this “new world” of adolescence. This research focus is motivated in part by the profound and indelible influence that the adolescent period has on future development. As professed so eloquently by Hall, “the whole future of life depends on how the new powers now given suddenly and in profusion are husbanded and directed” (Hall, p. xv).

For researchers, it has been suggested that it is impossible to talk about adolescents as if they were a homogenous group (Wyn & White, 1997). From a developmental psychology perspective, it is evident that some youth thrive and flourish, enjoying their experiences, adapting well to life, and contributing well to society; others muddle along and do the best they can with the various demands of the moment; still others find adolescence an alienating and unpleasant phase of development that is difficult to enjoy and benefit from – they struggle rather than thrive. Given the critical importance of adolescence as a stage of development, a wealth of research has focused on how best to assist adolescents’ development during this life stage and prepare them for adulthood.

Traditional research in developmental psychology derived from the perspective of Granville Stanley Hall and other pioneers framed adolescence as a stage of overcoming one’s beast-like impulses, while being engulfed in a protracted period of “storm and stress”. Similarly, many current conceptualisations of adolescence characterise the period as being associated with increases in risk-taking and problematic behaviours (Reyna & Farley, 2006). This deficit-orientation towards young people has been severely criticised, with the positive youth

development perspective proposed as an alternative lens through which to view adolescent development (e.g., Lerner, 2004).

The positive youth development (PYD) perspective is a strengths-based orientation that envisions successful development, not as the absence of risk behaviour, but as the presence of positive attributes that enable youth to reach their full potential as productive and engaged adults (Lerner, 2004; Pittman & Irby, 1996). Signifying a shift in perspective from problem prevention to youth promotion, the PYD perspective espouses the idea that the best way to prevent problem behaviours is to focus on adolescent strengths, not deficits, and to promote positive individual and contextual changes across the adolescent period (Lerner, Phelps, Forman, & Bowers, 2009).

Central to the PYD perspective has been the collaboration of researchers, practitioners, and policy-makers in creating a vision of youth as resources to be developed. However, while multiple disciplines can agree on what adolescents should *not* do (e.g., smoking, drinking alcohol), there has been less agreement as to which strengths and positive behavioral outcomes should be *promoted* during this period.

As PYD models have grown in number and become more popular over the past twenty years, they have been used in various contexts (e.g., Brady, Conway, Canavan, & Koviak, 2011). Due to their increasing use, it has become of paramount importance that the conceptualisations of PYD used are empirically valid, can be widely applied, and include constructs that are meaningful for parents, practitioners and policy-makers. However, the validity and applicability of models of PYD are only just beginning to be tested (Bowers et al., 2010).

A recent review of PYD frameworks has suggested that the Five Cs Model of PYD – which focuses on the measurement of Caring, Character, Competence, Confidence, and Connection -- is the most empirically supported framework (Heck & Subramaniam, 2009). Yet, concerns still remain about this measure. For example, concerns surround the indicators used to operationalize the Five Cs PYD Model across adolescence; the conceptual clarity of the Five Cs; the invariance of measures and manifestation of PYD across gender; and the generalizability of

measures of PYD outside of North America. It is evident that the Five Cs model of PYD requires further research in order to test its empirical validity.

In addition, while work has focused on the development of a valid measure of PYD, it is also important for researchers, practitioners and policy-makers to understand the predictors of PYD. While the measurement of PYD focuses on the manifestation of positive adolescent development across settings, it is also important to assess the key antecedents of behaviour that enhance adaptive, positive development. With a clear understanding of the predictors of PYD, intervention programmes and policies may be developed to enhance successful adolescent development for all youth.

Previous research has highlighted the role of intentional self-regulation as the primary mechanism promoting the adaptive development of youth (e.g., Gestsdóttir & Lerner, 2008). Intentional self-regulation is defined as goal-directed behaviour that is aimed at harmonising an individual's personal goals with demands and resources in the environment (Gestsdóttir & Lerner, 2008). In this way, individuals are seen as central to the actions that result in positive development. However, research from cognitive, behavioural, and social psychology illustrate the potential role of other key factors influencing adolescent action and behavioural choices. In particular, social and emotional components of decision-making, such as peer influence, future orientation, the regulation of emotions, and the values attributed to prosocial behaviour, are key components of adolescent behaviour. However, frameworks to understand these influences on adolescent development and empirical work focused on analysing these influences remain in its infancy. Therefore, the current research takes as its primary focus an examination of the role of these key social and emotional factors in predicting intentional self-regulation and PYD. An outline of the thesis chapter structure is provided below.

*Chapter 1* provides an introduction to the core theoretical and empirical literature on Positive Youth Development (PYD). The chapter traces the history and development of PYD theory and related theoretical perspectives. Central to the chapter is a focus on the theoretical foundations of modern conceptualisations of PYD and controversies and issues related to PYD measurement and theory. The chapter also reviews PYD research focused on adolescent development and



developmental outcomes and highlights important directions for future research, including the need to examine the relationship between intentional self-regulation and PYD outcomes.

*Chapter 2* examines the role of intentional self-regulation (ISR) in positive development. An overview of the development of self-regulation in childhood and adolescence is followed by an in-depth review of models of adaptive regulation. Central to the chapter is a detailed examination of the Selection, Optimisation, and Compensation (SOC) model (Freund & Baltes, 2002) and its role in positive youth development. Following this review of the SOC model, a critique of current research on self-regulation and positive adolescent development is presented and an extended model of adolescent self-regulation processes linked to PYD outcomes is proposed. Following this description of the hypothesised model of adolescent self-regulation, the goals for the subsequent two studies are outlined.

*Chapter 3* presents the details of Study 1, which examines the role of prosocial values in influencing adolescent behaviour. Valuing adaptive goals is an essential part of self-regulatory behaviour (Miller & Byrnes, 2001). Social-images, or prototypes, are proposed to influence behaviour through their impact upon willingness to engage in particular behaviours (Gibbons & Gerrard, 1995). Given the lack of research on the role of positive images and associated values in adolescent behaviour, Study 1 aims to 1) assess the salience of prosocial images in a group of Irish adolescents, 2) qualitatively assess the characteristics of the most salient images of prosocial behaviour as reported by Irish adolescents, 3) develop a measure of prosocial images and 4) examine the role of prosocial image values in perceived similarity and behavioural willingness. The developed measure is then used in subsequent studies to assess the role of prosocial values in predicting positive youth development.

*Chapter 4* outlines the methodology of Study 2. First, this chapter describes the process involved in the development of the student questionnaire used in the present study to assess social, emotional and attitudinal factors involved in adolescent self-regulation and positive youth development. Furthermore, this chapter provides an outline of the design of the study, followed by a description of the study participants, measures, and procedures used for data collection.

*Chapter 5* presents the results of Study 2, which is divided into three parts (2A, 2B, and 2C). This chapter presents the results of Study 2A, which focused on assessing the dimensionality of the Five Cs measure of Positive Youth Development (PYD) using Confirmatory Factor Analysis (CFA). Testing the scale dimensionality is important because the structure of PYD has not been tested outside of North America. In addition, the scales reliability, validity, and invariance across gender and younger and older adolescents is tested.

*Chapter 6* presents the results of Study 2B, which evaluates the hypothesised relationships between social and emotional factors (prosocial images, emotion regulation, peer influence, and future orientation), self-regulation, and outcomes of PYD, contribution, depression, and risky-behaviours. This study examines the influence of discrete social and emotional factors of self-regulation on positive and negative developmental outcomes. It is predicted that respondents evidencing higher ratings of prosocial images, adaptive emotion regulation, less susceptibility to peer influence, and higher future orientation will report higher PYD and contribution, and lower depressive symptoms and risky-behaviours. Multi-group Structural Equation Modelling analyses are used to assess whether the proposed relationships differ between younger and older adolescents and across gender groups.

*Chapter 7* presents the results of Study 2C, which assesses the hypothesised relationships between the factors analysed in Study 2B using longitudinal data at 12-months follow-up. Specifically, the model outlined in Study 2B is assessed using predictors from time 1, and outcomes 12-months later. Variable- and person-centered analyses are conducted in order to assess group and individual differences in development over 12-months. Of particular interest is the characteristics of the adolescents in the most optimal trajectories of positive development.

*Chapter 8* provides a discussion of the findings from Study 1 and Study 2. The chapter reviews the key findings in the context of previous research, outlines strengths and limitations of the current studies, and proposes avenues for future research. The theoretical, practical, and policy implications of these studies are also outlined, with specific recommendations for adolescent programme development.

## **1. Chapter One**

### **Introducing Positive Youth Development**

#### **1.1 Chapter Overview**

The purpose of this chapter is to introduce the core theoretical and empirical literature on Positive Youth Development (PYD). The chapter outlines the development of PYD theory and related theoretical perspectives. Central to the chapter is a focus on the historical development of PYD perspectives, the theoretical foundations of modern conceptualisations of PYD, conceptual models of PYD, and controversies and issues related to PYD measurement and theory. The chapter also reviews PYD research focusing on adolescent development and developmental outcomes.

#### **1.2 Introduction to Adolescence**

The first use of the word “adolescence” appeared in the 15<sup>th</sup> century, coming from the Latin word “adolescere”, meaning “to grow up or to grow into maturity” (Lerner & Steinberg, 2009, p 1.). With the emerging influence of child labour laws and universal education, sociologists noted that adolescence emerged as a discrete stage of lifespan development in the 20<sup>th</sup> century, when the transition from childhood to adulthood became more predictable and socially organised (Gestsdottir, Lewin-Bizan, von Eye, Lerner, & Lerner, 2009). Although debate continues on the “end-point” of adolescence and the beginning of adulthood (Arnett, 2003; Hendry & Kloep, 2007), adolescence roughly spans the 12-18 year old period (Keyes, 2006). Adolescence<sup>1</sup> is a phase of life characterised by a prolonged period of biological, cognitive, psychological, social growth and maturation, where the adolescent is tasked with adapting to life changes and organising developmental changes into a new definition of self (Côté, 2009; Erikson, 1959; Schwartz, Luyckx, & Vignoles, 2011). There is a long history of research in the area of adolescence, with research

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<sup>1</sup> Adolescence refers to the period of life during which an individual makes the transition from childhood to adulthood. This period is not rigidly defined, as the responsibilities of adulthood are found to be occurring later (Arnett, 2000). In addition, the terms ‘young people’ and ‘youth’ are commonly used to describe individuals in this period of development, and these terms will be used interchangeably throughout.

on positive adolescent development becoming increasingly prominent in recent years.

**1.2.1 Research with adolescents.** The beginnings of the scientific study of adolescence is attributed to the publication of Granville Stanley Hall's two-volume text on adolescence (Hall, 1904). Notably, Hall did not have a very positive view of this phase of development -- when writing on adolescence he proposed that society needed to "burn the vestiges of evil in their nature" (Hall, 1904, as cited by Henig, 2010, p. 4). Therefore, adolescence was framed as a stage of overcoming one's beast-like impulses while engulfed in a protracted period of "storm and stress". Similarly, current conceptualisations of adolescence characterise the period as being associated with increases in risk-taking and problematic behaviours such as smoking, careless driving, unprotected sexual behaviour, drug and alcohol use, delinquency, and suicidal behaviours (UNICEF, 2007). While research suggests that problematic behaviours are an important feature of adolescence (Reyna & Farley, 2006), their prevalence is often inflated in media and popular science (e.g., Devlin, 2006), with positive developmental outcomes much more common than is often assumed (Dooley & Fitzgerald, 2012). Below, research on negative and positive outcomes in adolescence is outlined.

**1.2.2 Negative outcomes in adolescence.** Adolescence is a critical period of lifespan development. Notably, 75% of all serious mental health difficulties first emerge between the ages of 15 and 25 years (Hickie, 2004; Kessler et al., 2005). Internationally, approximately 70% of health problems and most mortality among young people arise as a result of mental health difficulties and substance-use disorders (McGorry, 2005). Given these global trends, it is of little wonder that much research has focused on the mental health and negative behaviours of young people.

Within an Irish context, it is consistently found that one in five young people experience some degree of emotional distress (Lynch, Mills, Daly, & Fitzpatrick, 2005; Martin, Carr, Burke, Carroll, & Byrne, 2006; Sullivan, Arensman, Keeley, Corcoran, & Perry, 2004). This is in line with international figures that report adolescent mental health problems to have a prevalence rate of 20% (Irwin Jr, Burg, & Uhler Cart, 2002; Moon, Meyer, & Grau, 1999). Previous research found that

21% of Irish 12-18 years olds ( $N = 3,374$ ) met the criteria for at least one psychological disorder (e.g., anxiety, oppositional defiant disorder, mood disorder; Martin et al., 2006). One-fifth of these young people also presented symptoms or problems associated with clinical risk, such as thoughts of death or dying. In addition, in a large scale ( $N = 4,000$ ) survey of 15-17 year olds, 27% of Irish adolescents reported experiencing serious personal, emotional, behavioural or mental health problems (Sullivan et al., 2004). Gender differences were also observed, with females reporting higher depression and deliberate self-harm (Sullivan et al., 2004). Thus, in line with international trends, adolescence in Ireland appears to be a period of vulnerability for a significant portion of young people.

In addition to mental health problems, contextual factors such as economic instability, recession and high levels of youth unemployment highlight the pressing need to develop policy and practice to support young people. In particular, Ireland has one of the highest rates of young people not currently in education, employment or training (22%; Eurofound, 2012), high youth unemployment (26.3%; Eurostat, 2013) and worrying trends related to youth depression, alcohol consumption and suicide (Dooley & Fitzgerald, 2012; UNICEF, 2011; National Office for Suicide Prevention, 2012). For example, the mortality rate for Irish young people from suicide in the 15-24 year old age group is the fourth highest in the EU (National Office of Suicide Prevention, 2012), and third-highest in Europe among young Irish men aged 15-19 years (Eurostat, 2013). Furthermore, a national survey of Irish young people illustrated an increasing trend of alcohol and drug misuse, with older adolescents (6<sup>th</sup> year students) reporting high levels of problem drinking behaviour (48%) and substance misuse (26% cannabis use; Dooley & Fitzgerald, 2012). Thus, it appears that the trends of mental illness, risky behaviours, and suicide in Irish young people, illustrate an alarming picture of the adolescent period.

**1.2.3 Positive outcomes in adolescence.** Research on positive outcomes in Irish adolescence is limited to a small number of items on recent national surveys such as the My World survey (Dooley & Fitzgerald, 2012), the Health-Behaviours in School-aged Children survey (HBSC; Gavin, Molcho, Kelly, & Nic Gabhainn, 2013), the Growing-Up in Ireland survey of 13-year olds (Office for the Minister of Children and Youth Affairs; OMCYA, 2012), and the “Changing the Future: Experiencing Youth in Contemporary Ireland” study (UNICEF, 2011). In contrast to

the bleak figures of adolescent problem behaviour, these reports illustrate a much brighter picture for Irish adolescents. For instance, four out of five Irish adolescents reported being happy, while 68% of a representative sample of Irish adolescents reported being happy with family life (Dooley & Fitzgerald, 2012; UNICEF, 2011). In fact, 98% of Irish 13-year olds reported positive relationships with their parents (OMCYA, 2012). In addition, 71% of adolescents reported the availability of high support from an adult when in need, while almost half of adolescents surveyed reported coping well with problems (Dooley & Fitzgerald, 2012).

Comparable international data is difficult to ascertain. The majority of research has focused on the predictors of positive behaviour rather than the prevalence of it (Eccles & Barber, 1999). Some comparable data does exist. For example, in terms of positive behaviours, 50.5% of Irish 10-17 year olds reported participation in exercise four or more times a week (Gavin et al., 2013), while 59% of 10-17 year olds in the US participated in sports in general (National Survey of Children's Health, 2005). While not directly comparable (participation 4 or more times a week versus general participation), these figures illustrate a high rate of participation in sports among adolescents. Further discussion of positive behaviour is outlined below (see Section 1.5).

Overall, it appears that the lives of adolescents are complex. High rates of both negative and positive outcomes illustrate that adolescents may be exposed to both risk and protective factors simultaneously. Therefore a key question for researchers, practitioners, and policy-makers is how to maximise the protective factors and minimise risk to adolescents. First, a brief explanation of why it is important to maximise positive development in adolescence is presented and this is followed by an overview of different approaches on how best to promote adolescent development.

**1.2.4 Why are adolescent outcomes important?** Adolescent positive and negative outcomes are important for both short-term and long-term development. In terms of short-term developmental outcomes, good mental health is indispensable to adolescents' well-being, interpersonal relationships, and the ability to contribute to their community (Kapphahn, Morreale, Rickert, & Walker, 2006). For example, good mental health is an essential component of adolescent functioning that

facilitates the attainment of key developmental milestones that occur during adolescence (Kapphahn et al., 2006).

On the other hand, there is a strong relationship between poor mental health and many other health and development concerns for young people, including educational achievements, substance use and abuse, violence, and reproductive and sexual health (Dooley & Fitzgerald, 2012). For example, suicidal behaviours have been shown to coincide with many psychological problems such as depressive episodes, anxiety, and alcoholism (Buri, Bonin, Strik, & Moggi, 2009; D'attilio & Campbell, 1990; Hollis, 1996). Suicide behaviours are also related to a range of risk behaviours including risky sexual behaviour (Kim, Kim, Kawachi, & Cho, 2011), substance misuse (Schneider et al., 2011; Zahran, Zack, Vernon-Smile, & Hertz, 2007) and delinquency (Björkenstam, Björkenstam, Vinnerljung, Hallqvist, & Ljung, 2011). Thus, negative developmental outcomes in adolescence may precipitate other negative outcomes. For example, depression is found to increase with increasing involvement in risk behaviour (Hallfors et al., 2004).

Developmental success during adolescence is also very important because of long-term implications for adult development and health. For example, depression during adolescence significantly elevates the risk of subsequent major depressive disorder, increased hospitalisations, recurrent depressions, psychosocial impairment, alcohol abuse, antisocial behaviours and higher rates of marital dissatisfaction in later life (Bansal, Goyal, & Srivastava, 2009; Gotlib, Lewinsohn, & Seeley, 1998; Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2003).

Research examining the impact of success on early developmental tasks, on later positive adaptation, has received much less attention. However, research has observed a relationship between competence in adolescence and civic engagement in young adulthood. Specifically, civic engagement (i.e., citizenship and volunteering) in young adulthood is significantly predicted by academic and social competence in adolescence (Obradović & Masten, 2007).

In summary, adolescent outcomes can have a significant impact on short- and long-term development. While positive outcomes such as good mental health and social competence may significantly protect against future problems, negative outcomes during adolescence such as poor mental health or risky behaviours can

elevate the risk of future problems. Over the years, two primary approaches have emerged aimed at minimising the deleterious impact of adolescent problem behaviour on young people – the *prevention* approach and the *positive youth development* approach. These approaches are outlined below.

**1.2.5 Approaches to adolescent problems.** Contemporary approaches to adolescent problem behaviour are derived from intervention approaches and can be categorised as adopting either a *prevention* approach or a *positive youth development* approach. These approaches can be further divided using adjectives such as competitive (e.g., individuals rated as better or worse than others at specific skills such as behaviour inhibition) versus cooperative (e.g., learning to work with other people to achieve a desired goal), risk versus resiliency, and problem-centred versus asset-building. Both approaches aim to increase the wellbeing of young people. The central difference between the two approaches is that while prevention approaches by definition aim to prevent or moderate human dysfunction, positive youth development aims to build and enhance the availability of assets (individual or contextual). Before discussing each focus in turn, it is useful to describe the broader intervention approach from which the *prevention* and *positive youth development* approaches derive.

***Intervention approach.*** Young people who were most likely to become involved in one or more risk behaviour such as delinquency, substance misuse, and risky sexual behaviour have been labelled *at-risk youth* or *youth at risk* (Guerra & Bradshaw, 2008). Beginning in the 1950s, worrying trends in juvenile crime and increasing rates of poverty, divorce, out-of-wedlock births, family mobility, and single parenthood lead to a reframing of practices to support the family in its role to raise successful children (Weissberg & Greenberg, 1998). Initially, interventions focused on supporting families and children who were experiencing existing crises. The focus of the intervention approach was to contain and reduce juvenile crime, or transform poor character into better moral character (Catalano, Hawkins, Berglund, Pollard, & Arthur, 2002). Interventions and treatments were developed for a wide range of specific problems such as mental health problems, substance abuse, conduct disorders, delinquent behaviour, academic dropout, and teenage pregnancy (Catalano et al., 2002).



***Prevention approach.*** Prevention-focused approaches began to emerge in the 1980's that were designed to support families, schools, and communities *before* the emergence of problem behaviours in children (Catalano et al., 2002). As youth problems continued to raise concerns in society, prevention interventions were developed for a wide range of specific problems or disorders, accompanied by a cornucopia of services and policies (e.g., children's protective services) designed to target and reduce the problem behaviours of troubled youth (e.g., teenage pregnancy, drug and alcohol misuse, antisocial behaviour, school drop-out; Catalano et al., 2002). However, a number of criticisms were raised about prevention efforts that focused only on a single behaviour. The prevention approach was criticised on the basis that developing separate problem-specific programmes ignored the high levels of covariation of risks (Barone et al., 1995; Fergusson, Horwood, & Lynskey, 1994). In addition, this approach also disregarded empirically supported research of common predictors of multiple risk or problem behaviours (Jessor et al., 2003). For example, poverty, family conflict, and academic failure are shared risk factors for delinquency, substance abuse, teenage pregnancy, and school drop-out (e.g., Dryfoos, 1990). Other criticisms of problem-specific prevention approaches to youth behaviours included a failure to incorporate environmental predictors (e.g., gang culture) and individual-environment interactions (e.g., resilience) in seeking to change behaviour, focusing only on problem behaviour (e.g., substance use) rather than the promotion of healthy development (e.g., autonomy), and ignoring factors that promote positive youth development (e.g., high self-esteem; Catalano et al., 2002). The starting point of the prevention approach is that there is something inherently wrong, deficit, or insufficient in the abilities of young people. This view of adolescence depicts a deficit perspective, where development is a process of overcoming deficits and risk (Guerra & Bradshaw, 2008). It assumes that adolescents are "broken" or in danger of becoming broken (Benson, 2003), and therefore are to be regarded as "problems to be managed" until they reach adulthood (Roth, Brooks-Gunn, Murray, & Foster, 1998). Thus, a prevention-focused approach may obscure the fact that adolescence is also a time of mastery linked to each individual's unique talents, strengths, skills, and interests (Larson, 2000; Damon, 2004; Scales & Leffert, 2004).

In addition to these criticisms, results from evaluation studies often showed such programmes had little effect on problem behaviours such as drug use, pregnancy, school drop-out, or engaging in delinquent behaviour (e.g., Ennett, Tobler, Ringwalt, & Flewelling, 1994; Kirby, Harvey, Claussenius, & Novar, 1989). Thus prevention approaches focusing on single behaviours were not an effective means for reducing problem behaviour in young people.

The failings of single-behaviour prevention programmes lead to *prevention science*, a second generation prevention approach that focused on preventing, or mitigating the causes of problem behaviour (Coie et al., 1993). This expanded prevention approach shifted focus to identifying the predictors of problem behaviour in youth (Hawkins, Catalano, & Miller, 1992). The precursors to dysfunctional or healthy behaviour were categorised as risk factors or protective factors (Coie et al., 1993). This shift in focus led to a proliferation of research that identified longitudinal predictors that increase or decrease the likelihood of problem behaviour. For example, community risk factors (e.g., normative expectations for behaviour, high levels of poverty), school factors (e.g., academic failure, low engagement), family factors (e.g., high levels of family conflict), and individual factors (e.g., early aggressive behaviour, early initiation of substance use), have been identified as risk factors for problem development in adolescents (Hawkins et al., 1992; Sampson, Raudenbush, & Earls, 1997; Werner & Smith, 1992). In addition, individual and contextual protective factors such as positive social orientation, social and emotional competencies, peer influences and opportunities for prosocial involvement have been found to decrease the likelihood of problem behaviour for young people exposed to risk (Darling & Steinberg, 1993; Ellickson & Bell, 1990; Masten, Best, & Garmezy, 1990). Thus, prevention science suggests that by focusing on the antecedents of behaviour, preventive interventions should seek to both reduce risk factors and enhance protective factors. A consensus began building that a successful transition to adulthood required far more than avoiding drugs, violence, or precocious sexual activity: the promotion of young people's social and emotional development is important in preventing the problem behaviours (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Catalano et al., 2002).

***Positive youth development approach.*** In general, vulnerable young people, youth risks and youth problem behaviour have been the traditional focus of inquiry

for researchers, practitioners and policy-makers. However, such problem-focused approaches often translate to change strategies with a sub-section of youth that emphasise amelioration. In contrast, strength-based perspectives orient researchers and practitioners to the positive factors in *all* youth's lives, which become the focus of change strategies designed to enhance strengths. This emphasis on positive and adaptive features of adolescence is incorporated into a number of models subsumed under the auspices of *positive youth development*.

The positive youth development (PYD) perspective envisions successful development, not as the absence of risk behaviour, but as the presence of positive attributes that enable youth to reach their full potential as productive and engaged adults (Lerner & Benson, 2003; Pittman & Irby, 1996). Just as being healthy is more than the absence of illness, positive youth development is more than the absence of risks, with the adage of "*problem free is not fully prepared*" (Pittman & Irby, 1996). This signifies a shift in perspective from problem prevention to youth promotion. Thus, the Positive Youth Development (PYD) perspective espouses the idea that the best way to prevent problem behaviours is to focus on adolescent strengths, not deficits, and to promote positive individual and contextual changes across the adolescent period (Lerner, Phelps, Forman, & Bowers, 2009). PYD strikes the conceptually appealing aim of accentuating the positive in order to simultaneously minimise negative outcomes (Lerner & Benson, 2003).

It is important to note that PYD and prevention approaches share the mutual goal of promoting better outcomes for young people. Both PYD and prevention approaches call for expanding prevention programmes beyond a single problem focus, consideration of the whole child, consideration of social and contextual factors, and recognition of the need for programmes that influence multiple domains (i.e., family, peer, school). The following section presents a more detailed perspective on positive youth development.

### **1.3 Historical Context of Positive Youth Development**

The investigation of factors that result in positive outcomes for young people has a long history. Lerner and colleagues (2009) suggested that the seeds of the positive youth development (PYD) movement were sown in the 1970's, with the proposal of a relational (i.e., interactive) perspective about influences on human

development (e.g., Overton, 1973). While the relational perspective (e.g., bi-directional interactions between individual and context), remains at the core of PYD theory, the interest in the positive development of young people dates much further back than the scientific study of adolescents in the 20<sup>th</sup> Century. For example, the 18<sup>th</sup> Century scientist Benjamin Franklin and the 19<sup>th</sup> Century French philosopher Charles Renouvier both advocated for the inclusion of moral components in education due to the “weakening sense of duty” that youth were experiencing (Stock-Morton, 1988, p. 85). Even in the 18<sup>th</sup> and 19<sup>th</sup> Century, it was believed that through moral instruction, character would be developed and additional benefits, such as better behaviour in the classroom, higher academic performance and increased societal justice, would be achieved (Watz, 2011). This is not unlike the aims of present day prevention and PYD movements, although as outlined above, contemporary approaches view the cause of problem behaviour as much more than the lack of moral character. Although the scientific study of the adolescent period began at the start of the 20<sup>th</sup> Century (Hall, 1904), little or no research was carried out on positive adolescent development until the 1960s. In the interim, developmental research focused on the study of cognitive processes and mental assessment in the 1920s, and social-learning through the 1940’s and 1950’s (Magai & McFadden, 1995).

In the period referred to as the “second phase” of the scientific study of adolescence, Lerner and colleagues (2009) point to changing perspectives occurring in the 1960’s. The second phase of adolescent research documented the diversity of adolescent development. For example, Gould (1981) illustrated that prior to this period, individual differences (i.e., diversity), were seen either as error variance due to lack of experimental control, or as deficits within the person (e.g., individual differences in IQ). According to Cairns and Cairns (2006), by the mid-1960s, developmental psychology favoured dynamic developmental models, for example by reference to concepts such as social interaction and bi-directionality of familial relations, and social learning theory concepts such as “modelling” (Bandura & Walters, 1963; Sears, 1951). Diversity and dynamic individual-context interactions are central to present-day PYD theory, as current PYD theory emphasises individual variability and the importance of the interactions between young people and their context. However, adolescent research throughout the 1960’s and 1970’s was still

framed within a deficit-perspective (Lerner et al., 2009). For example, Piaget's (1964) theory of cognitive development proposed that everyone reaches "formal operations". However, researchers in the 1970s, with strong focus on cognitive outcomes during adolescent development, highlighted that only 30-35% of adolescents reach this stage of abstract hypothetico-deductive thinking (Kuhn, Langer, Kohlberg, & Haan, 1977). Therefore, using Piaget's framework, 65-70% of adolescents may be deemed as cognitively immature or deficient.

In the 1980's, a positive approach to youth emerged from the philosophy and practice of youth-work professionals primarily located in non-profit, community-based, youth serving organisations (Eagly & Steffen, 1984). Moving from a narrow public health model which focused on treatment, intervention and prevention of problems, it began to be acknowledged that young people needed to be able to learn and develop across a full range of developmental areas (Pittman & Wright, 1991). This applied-approach sought to work *with* youth to attain positive outcomes for all (e.g., school completion). This universal application of resources, which was aimed at supporting all youth, and not focusing only on a sub-section of at-risk youth, was a significant influence on the PYD perspective. Buoyed by the proliferation of research on affirmative topics such as civic engagement, connectedness, generosity, purpose, empowerment and leadership in the mid-1990s, PYD began to posit the theoretical foundations of its field (Phelps et al., 2009).

### **1.4 Theoretical Foundations of PYD**

Positive youth development (PYD) has been conceptualised in a number of different ways, with a number of theories proposed (see Section 1.5.1 below). The roots of the PYD perspective are grounded in developmental systems theories of human development (see Table 1.1 for the defining features; Lerner et al., 2009). A number of central elements of PYD theory include: (a) Integration of Levels of Organisation, (b) Developmental Regulation, (c) Plasticity, and (d) Optimism, the Application of Developmental Science, and the Promotion of Positive Human Development. These elements lay the basis for the PYD theories subsequently outlined.

**1.4.1 Integration of levels of organisation.** Developmental systems theories of human development emphasise that positive, healthy development trajectories

across the lifespan are the result of mutually beneficial relations between the developing person and aspects of their context that support and promote healthy growth (Benson, Scales, Hamilton, & Sesma, 2006). For example, the intrinsic motivation for school engagement in a student may be met by an enthusiastic, skilled teacher with the ability to develop knowledge and understanding in students, thereby furthering the motivated students' academic abilities and fostering a positive learning environment. This dynamic interacting relationship between individual and context stands in contrast to earlier developmental theories that sought to explain development. Earlier developmental theories were often polarised, focusing on singular aspects of development. For example, theories of canalization are biologically based, and highlight the role of genes in limiting or restricting development to a small number of outcomes (Waddington & Robertson, 1966). In contrast, Vygotsky (1962) viewed development as a socially mediated activity, as culture is transmitted from generation to generation. Such focus on the polarities of either biology or culture, and similarly nature versus nurture, and the role of the individual versus society, in shaping outcomes is in contrast to developmental systems theories which acknowledge the role of multiple, interacting factors (Lerner, 1998 ). Accordingly, in line with Bronfenbrenner's social ecology model (see Figure 1.1), multiple levels of organisations are engaged in human development, from biology and personality disposition to social institutions, culture and history (Bronfenbrenner, 1979).

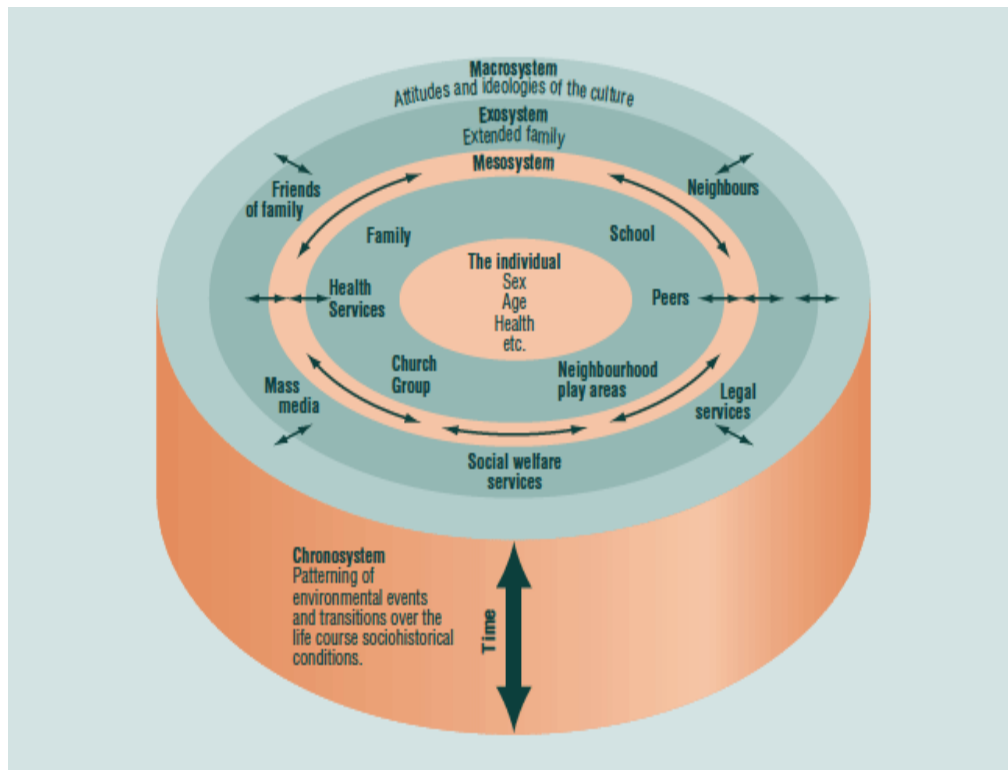


Figure 1.1

*Bronfenbrenner's Social Ecology Model (from Bowes & Hayes, 1999)*

**1.4.2 Developmental Regulation.** As a consequence of the integration of the multiple levels of the developmental system, a key proposal of the PYD perspective is that these dynamic interrelations between the individual and the multiple levels of context are the basic processes of development (Overton, 2006). Positive development is defined as the positive alignment between the multiple levels of organisation and the individual, leading to mutually beneficial relations, termed *adaptive regulations* (Brandtstädter, 2006). A cross-section of this relationship (i.e., an example from a single time-point) is illustrated in Figure 1.2. Positive interactions between the individual and context lead to adaptive regulations, while negative interactions (e.g., social isolation) may lead to maladaptive regulations (e.g., self-injurious behaviour).

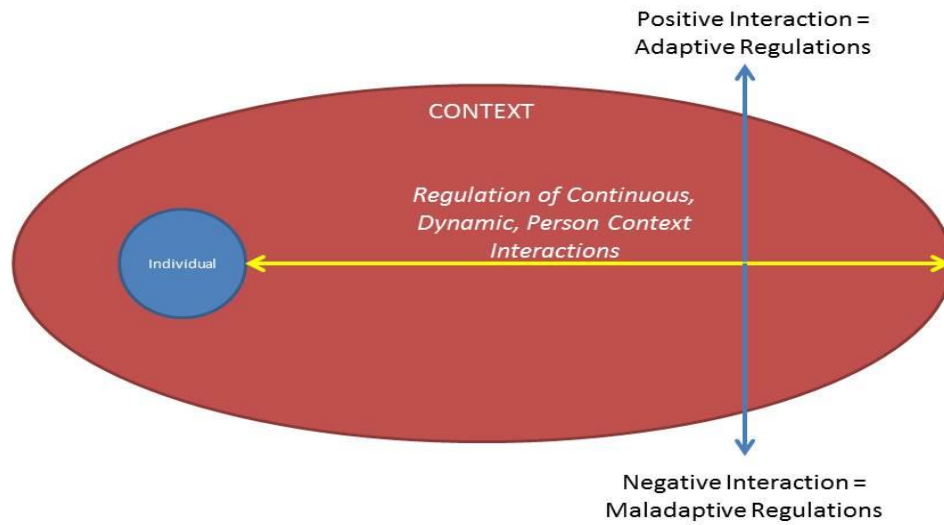


Figure 1.2

*Cross-section of dynamic interactions between individual and context*

For example, adaptive regulations (i.e., positive individual-context interactions) may occur in the instance of providing young people with opportunities to contribute to, and participate in, community efforts to improve social life (e.g., opportunities to help allocate funding to community charities). The actual participation of the young people in turn is dependent on individual factors, such as a young person's moral identity. Over time, this interaction between the individual (e.g., their moral identity) and context (e.g., one of opportunities for youth) may further develop a young person's commitment and skill in community awareness and resource building. In such an interaction, the actions of the individual on the context and the actions of the context on the individual are fused in the production of healthy outcomes for both the individual and the institutions (Elder & Shanahan, 2006). When these adaptive regulations exist, healthy, positive individual development can occur in numerous forms (e.g., increased self-esteem, increased social competence, increased empathy etc.). In turn, adaptive regulations theoretically lead a young person to make further multifaceted contributions at a variety of contextual levels; to the self (e.g., health-promoting behaviour such as



health-screening), family (e.g., contributing to family coherence), community (e.g., volunteering), and civil society (e.g., advocating for equal rights).

Thus, adaptive regulations benefit both individual development and the social context that supports the development of the young person (Lerner, 2004). For instance, the example of the needs of a motivated student being met by a skilled teacher, benefits both the individual in terms of knowledge and skills attained, and benefits the social context by fostering a positive learning environment. Recent research findings have provided support for this relationship between PYD and contributions to others (Jelicic, Bobek, Phelps, Lerner, & Lerner, 2007; Lerner et al., 2005). For example, PYD in 5<sup>th</sup> Grade was found to significantly predict contribution both cross-sectionally (Lerner et al., 2005) and 12-months later (Jelicic et al., 2007).

**1.4.3 Plasticity.** Another key element of developmental systems theories of human development is plasticity. Plasticity refers to the potential for systematic change within the developmental system. This potential exists due to the dynamic interactive relationships between a developing person, and their biological, psychological, and/or ecological organisation (Lerner et al., 2005). Thus, plasticity is a fundamental potential of human development (Lerner et al., 2009). However, plasticity is not unlimited, as all developmental modifications are not possible, nor are all possible variations in person-context exchanges. For example, an individual cannot change the structure of their sympathetic nervous system to reduce the stress reactivity that is induced by their work conditions. However, people can change their coping strategies, support networks at work, communication style, and/or work layout in order to change their interacting dynamic with their work conditions. In this way, biological processes of stress reactivity can be altered by active engagement that changes person-context-biological dynamics (Carlson, Specia, Faris, & Patel, 2007; Goleman & Schwartz, 1976). In sum, relations between multiple levels within the developmental system both facilitate and constrain opportunities for change (e.g., change is constrained by past developments and current contextual conditions; Lerner, Dowling, & Anderson, 2003). Therefore, relative plasticity, or the potential for systematic change in the structure or function of person-context relations – exists across the lifespan (Baltes, Lindenberger, & Staudinger, 1998; Lerner, 2002).

**1.4.4 Optimism, the Application of Developmental Science, and the promotion of Positive Human Development.** The potential for relative plasticity gives purpose to an optimistic and proactive search for characteristics of individuals and of their ecologies that, together, can be arranged to promote positive human development across life. This is in direct contrast to prevention approaches which focused on risk and protective factors in order to minimise problem behaviour, and thus made no attempt to actively promote positive development (see Section 1.2.5, p. 12). Thus, the role of developmental science is to devise interventions aimed at enhancing individuals' developmental trajectories, for example through individual strength-building exercises (e.g., learning to regulate emotions), or broader community-based programmes or social policies, where the promotion of positive human development may be achieved by aligning the strengths of individuals and contexts. For example, creating effective person-context regulations may on one hand work at enhancing an individual's moral sense of social justice, while on the other hand work to improve systems within the social context to enable equality and opportunities across individuals (Lerner et al., 2003). Notably, it is acknowledged that there is variation from socio-cultural setting to setting in how an individual must function to manifest productive and healthy development (Lerner et al., 2003). For instance, some societies may support regulations of obedience, whereas other societies may value freedom and equality. Thus, the promotion of positive human development is an ongoing process aimed at perpetuating person-context regulations that serve mutually beneficial individual and institutional relations (Elder, Modell, & Parke, 1993).

**1.4.5 Summary.** In summary, given the array of individual and contextual variables involved in the interacting relations between an individual and context (e.g., there are over 70 trillion potential human genotypes and each may be coupled across life with an even larger number of life course trajectories of social experiences; Hirsch, 2004), the diversity of development becomes of central interest. Given the traditional focus of adolescent work on preventing problems, the developmental systems theories approach is particularly interesting when coupled with the notion of plasticity (the potential for systematic change across development; Lerner, 2004). The idea of diversity of development and plasticity lead to a position that positive changes can be promoted throughout development, as a consequence of

adaptive alignments between people and settings (Benson et al., 2006). Thus, the PYD perspective uses the developmental systems theories of human development as a foundation for research into positive development of young people. The characteristics of individuals and settings that promote positive youth development may vary from context to context, therefore, developmental science has a key role in understanding variation in adolescent thriving.

Table 1.1

*Defining Features of Developmental Systems Theories (Derived from Lerner et al., 2009)*

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### **A Relational Metatheory**

Predicated on a postmodern philosophical perspective that transcends Cartesian dualism, developmental systems theories are framed by a relational metatheory of human development. There is, then, a rejection of all splits between components of the ecology of human development (e.g., between nature- and nurture-based variables), and between continuity and discontinuity and between stability and instability. Systemic synthesis or integrations replace dichotomies or other reductionist partitions of the developmental system.

### **The Integration of Levels of Organisation**

Relational thinking and the rejection of Cartesian splits is associated with the idea that all levels of organisation within the ecology of human development are integrated, or fused. These levels range from the biological and physiological through the cultural and historical.

### **Developmental Regulation across Ontogeny Involves Mutually Influential Individual $\leftrightarrow$ Context Relations**

As a consequence of the integration of levels, the regulation of development occurs through the mutually influential connections among all levels of the developmental system, ranging from genes and cell physiology through individual mental and behavioural functioning to society, culture, the designed and natural ecology and, ultimately, history. These mutually influential relations may be represented generically as Level 1  $\leftrightarrow$ , Level 2 (e.g., Family  $\leftrightarrow$  Community), and in the case of ontogeny may be represented as individual  $\leftrightarrow$  context.

### **Integrated Actions, Individual $\leftrightarrow$ Context Relations, Are the Basic Unit of Analysis within Human Development**

The character of developmental regulation means that the integration of actions – of the individual on the context and of the multiple levels of the context on the individual (individual  $\leftrightarrow$  context) - constitute the fundamental unit of analysis in the study of the basic process of human development.

Table 1.1

*Defining Features of Developmental Systems Theories continued.*

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### **Temporality and Plasticity in Human Development**

As a consequence of the fusion of the historical level of analysis – and therefore temporality – in the levels of organisation comprising the ecology of human development, the developmental system is characterised by the potential for systematic change, by plasticity. Observed trajectories of intraindividual change may vary across time and place as a consequence of such plasticity.

### **Relative Plasticity**

Developmental regulation may both facilitate and constrain opportunities for change. Thus, change in individual  $\leftrightarrow$  context relations is not limitless, and the magnitude of plasticity (the probability of change in a developmental trajectory occurring in relation to variation in contextual conditions) may vary across the life span and history. Nevertheless, the potential for plasticity at both individual and contextual levels constitutes a fundamental strength of all human development.

### **Intraindividual Change, Interindividual Differences in Intraindividual Change, and the Fundamental Significance of Diversity**

The combinations of variables across the integrated levels of organisation within the developmental system that provides the basis of the developmental process will vary at least in part across individuals and groups. This diversity is systematic and lawfully produced by idiographic, group differential, and generic (nomothetic) phenomena. The range of interindividual differences in intraindividual change observed at any one point in time is evidence of the plasticity of the developmental system, and makes the study of diversity of fundamental substantive significance for the description, explanation, and optimisation of human development.

Table 1.1

*Defining Features of Developmental Systems Theories continued.*

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**Optimism, the Application of Developmental Science, and the promotion of Positive Human Development**

The potential for and instantiations of plasticity legitimate an optimistic and proactive search for characteristics of individuals and of their ecologies that, together, can be arrayed to promote positive human development across life. Through the application of developmental science in planned attempts (interventions) to enhance (e.g., through social policies or community-based programmes), the character of humans' developmental trajectories, the promotion of positive human development may be achieved by aligning the strengths (operationalised as the potentials for positive change) of individuals and contexts.

**Multidisciplinarity and the Need for Change-Sensitive Methodologies**

The integrated levels of organisation comprising the developmental system require collaborative analyses by scholars from multiple disciplines. Multidisciplinary knowledge and, ideally, interdisciplinary knowledge is sought. The temporal embeddedness and resulting plasticity of the developmental system requires that research designs, methods of observation and measurement, and procedures for data analysis be change-sensitive and able to integrate trajectories of change at multiple levels of analysis.

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## 1.5 The Construct of Positive Youth Development

With the developmental systems theories of human development expanding to the field of adolescent research, the link between diversity of development and plasticity became central to developing models of positive development. Using this as a premise, positive youth development has, at its core, the creation and promotion of a strength-based vision of, and vocabulary for, the nature of adolescent development. PYD enables youth to be viewed, not as problems of society, but as resources to be developed (Roth & Brooks-Gunn, 2003).

In the following discussion of PYD, a critique of ambiguities in the field of PYD research is followed by an outline of several conceptualisations of PYD (see Table 1.2). Subsequently, several issues that have been singled out as problematic are addressed. Finally, suggestions are proposed for redressing the valid concerns that have impeded progress in the field.

**1.5.1 Ambiguities in definitions and terminology of positive youth development.** Several reviews of the growing literature on positive youth development have articulated broad consensus in the overarching principles of the PYD approach (Benson & Pittman, 2001; Catalano et al., 2002; Hamilton et al., 2004; Catalano et al., 2004; Benson et al., 2006). A synthesis of these reviews illustrate recurring themes of; the inherent capacity for positive growth and development; the importance of relationships, contexts and ecologies in nurturing positive development; the importance of young people's participation in multiple, positive relationships, contexts and ecologies; the benefit derived from positive relationships and nurturing contexts and ecologies appears to be universal across race, gender, ethnicity and income; the importance of the community as a mechanism for facilitating positive development; and the importance of young people as active agents and resources for creating positive relationships, contexts, and ecologies (Benson et al., 2006). While consensus in a field is welcome, these recurring themes are broad in nature, as they restate core developmental systems theories propositions (e.g., the importance of relationships and contexts for all individuals, the active agency of the individual).

This broad consensus in the field of PYD research is undermined by ambiguity in the definitions of PYD and its application. Due to the variety of

stakeholders engaged in developing the concept of PYD (e.g., youth-work practitioners, policy-makers, and researchers), and the use of PYD in multiple contexts, a variety of definitions of PYD have emerged. For example, in a study of PYD, To (2007) used the term PYD to operationalize empowerment. This study of PYD had three primary goals; to examine how students capture a sense of competence; to explore how school and community practitioners collaborate with other service users and partners to initiate change and strengthen the school-community partnership; and examine how practitioners advocate for students in the education sector (To, 2007). PYD has also been used to indicate healthy adjustment (Shek, Siu, & Lee, 2007). For example, PYD was operationalized as 15 discrete constructs of PYD (e.g., bonding, resilience, competence, prosocial norms) derived from the objectives of successful positive youth development programmes (Catalano et al., 2002). Further examples of the variability in definitions of positive youth development are seen in many other works, as the term has been used to mean positive well-being (Moore & Glei, 1995), effective development (Weissberg & O'Brien, 2004), positive behaviours (Flay, 2002) and youth development (Larson, 2006). Still other authors have used the term without defining it (e.g., Park, 2004).

In addition to the lack of agreement on the definition and operationalisation of PYD, the term has been used in three distinctly different ways; as a natural process of development; as a philosophical approach that emphasises active support for the growing capacity of young people; and as a set of policies and practices that foster development of young people (Hamilton et al., 2004). Similar to the variability and lack of clarity in the definition of PYD, there is also a lack of clarity on whether research is assessing the nature of the young person, the context they are situated in, or the practices and policies they are subjected to (e.g., Riestenberg, 2006). Thus consideration must also be given to the selection and justification of the PYD approach in order to provide a clearer definition of the aspect(s) of PYD under scrutiny (e.g., process, philosophy, or policy).

Thus, a challenge to the review and understanding of positive youth development literature is the lack of a common definition of the term within and across fields of study (Lerner et al., 2009). This is not just problematic for researchers, but for policy-makers, social services planners and youth practitioners who rely on measurement indicators to bridge goals and practical action, and guide



the making of social policy (Land, Lamb, & Mustillo, 2001). Therefore, the coherence of theoretical frameworks and the validity and reliability of measures used to track social progress and the impact of youth policies and programmes are of the utmost importance. As the Five Cs measure of PYD is the most theoretically developed model to date, a proposed solution to this conceptual variability is to further develop the coherence and applicability of this measure. Extending the Five Cs measure to a broader international context, and examining the relations between PYD and a number of individual factors that impact individual-context relations, can provide further clarity on this measure of PYD and its utility in different contexts. Before taking a detailed look at the Five Cs measure, a brief discussion of conceptual models of PYD is undertaken.

**1.5.2 Conceptual models of Positive Youth Development.** Related to the ambiguity in terminology and definition of PYD, several conceptualisations of adaptive development have been created in order to capture the positive developmental features that enhance the dynamic interaction between individual and context (see Table 1.2). For example, the social development model (Catalano & Hawkins, 1996) proposes that children who experience developmentally appropriate opportunities for active involvement in their families, schools, and communities, *and* are recognised for their efforts are more likely to form positive bonds and attachments that inhibit deviant or problem behaviour (Catalano et al., 2003; see Table 1.2 for a list of protective factors). Hawkins social development model, similar to models of resilience, has as its focus the prevention of problematic behaviours. Although resilience may be conceptualised as an affordance of strength, resilience only operates in the presence of a risk factor as it serves to decrease an individual's vulnerability to risk (Rutter, 1987). Thus, resilience does not necessarily enhance a person's potential in other areas (Rutter, 1987). Therefore these models may be considered as models of youth development, but do not adhere to the goal of positive youth development which is to enhance the developmental success of young people (Lerner, 2004). Lerner, Fisher and Weinberg (2000) advocate that preventing disease or behavioural problems does not constitute the provision of health or the actualisation of positive development.

Other models outlined in Table 1.2 give considerable attention to conceptualising development-enhancing processes. For example, Pittman and Irby

(1996) have proposed that youth need seven critical “inputs” (e.g., basic care and services, healthy relationships with peers and adults, high expectations and standards), while other research suggests that the needs of youth may be reduced to three critical factors: safe places, challenging experiences, and caring people (Zeldin, Kimball, & Price, 1995).

A leading conceptual model of positive youth development proposes the concept of developmental assets (Benson, 2003). This developmental assets framework is intended to identify the supports available to *all* young people that would help them achieve optimal development. In line with developmental systems theory, this model proposes the dynamic interaction between external assets (e.g., social or contextual factors such as support or boundaries and expectations) and internal assets (e.g., individual factors such as personal values). By working together, these assets will prevent high-risk health behaviours and enhance developmental success (e.g., educational and health outcomes; Benson et al., 2006). A total of 40 elements are proposed in this framework. Twenty internal assets are subdivided into assets associated with educational commitment, positive values, social competence, and positive identity. A further 20 external assets are subdivided into those associated with support, empowerment, control, and use of time (Benson, 2002). An example of the interaction between internal and external assets may be seen in schools where a student’s self-confidence (internal asset) may be influenced by a teacher’s feedback (external asset), which may in turn be influenced by the student’s attitude (internal asset), which may influence the way in which the teacher provides that feedback (external asset).

Extensive research has supported the developmental assets framework (e.g., Scales, 1999; Scales, Benson, Leffert, & Blyth, 2000; Scales, Benson, Roehlkepartain, Sesma Jr, & van Dulmen, 2006). For example, in a sample of over 99,462 youth aged 11-17 years, the 40 developmental assets under the eight categories of internal and external assets (see Table 1.2) were measured using the Profiles of Student Life: Attitudes and Behaviour self-report measure (PSL-AB; Leffert et al., 1998). Results illustrated that each successive increase in a young person’s quartile asset level (e.g., from 0-10 assets, 11-20 assets, up to 31-40 assets), was associated with higher scores of adolescent thriving (e.g., school success), and lower reporting of risk behaviours (e.g., problem alcohol use; Benson, Scales,

Leffert, & Roehlkepartain, 1999). This illustrates a cumulative effect of developmental assets, termed “vertical pile-up” (Benson, 2003). Thus, the developmental assets framework illustrates the importance of multiple supports for optimal development.

A number of criticisms have been directed at the developmental assets framework. For example, the assertion that high levels of all 40 assets identified in the framework are necessary for positive development is overly-simplistic (Resnick, Bearman, Blum, et al., 1997; Small & Memmo, 2004). Although theoretically there may be a cumulative advantage of evincing all 40 assets, it is likely that some assets are more important than others in specific settings. This is illustrated in research findings that showed connection to community and norms of responsibility predicted better academic grades, while other assets (e.g., other adult relationships, or honesty) did not (Scales et al., 2006). In reality, the importance of a particular asset is likely to vary as a function of both individual and contextual factors (e.g., developmental status, community conditions) and the developmental outcome (Small & Memmo, 2004). In addition, the simplicity of the developmental assets model diminishes its value, as the assets categorised under headings of “internal” and “external” assets incorporate a plethora of protective factors, the absence of risk factors, coping processes, recovery factors, developmental resources, and developmental outcomes (Small & Memmo, 2004). By failing to recognise the important differences between these types of assets, this framework oversimplifies the complex processes that they entail, limits our understanding of those processes, and dilutes the usefulness of the model as both a theoretical construct and as practical strategy (Small & Memmo, 2004).

In general, the models of youth development outlined above, attempt to define the ingredients for the recipe of positive development. However, there are a number of issues. First, the models lack clarity on the dynamic relationships between the individual and their context. Providing a list of “ingredients” without reference to how they interact, coalesce, or manifest in a family, school or community context, diminishes the value of the youth development models. Second, factors such as “challenging experiences” are unclear and inherently difficult to measure accurately. Thus, these models lack empirical validation. Third, these youth development models fail to provide a clear conceptualisation of the “good”

youth. While inputs such as safe places are deemed essential to enhance development (Zeldin et al., 1995), there is a lack of consensus on *what* it is that is developed, or should be the goal of development-enhancing programmes.

The variability in the conceptualisation of PYD has created variability in the application of the PYD perspective in youth programmes. For example, while PYD programmes commonly provide opportunities and encouragement to young people to develop their competencies and related knowledge, there are wide variations in the detail of these programmes (Roth, Brooks-Gunn, Murray, & Foster, 1998). For example, based on Benson's (2003) 40 developmental assets, the goal of a PYD programme is to cultivate (and accumulate) adolescent developmental assets (Gutman & Midgley, 2000). On the other hand, based on youth development models (e.g., Pittman & Irby, 1996), other programmes are based on the premise that social-emotional competencies (i.e., self-awareness, social awareness, self-management, relationship skills, and responsible actions) should be targeted in order to build cognitive, academic, social, and emotional competence (Weissberg & O'Brien, 2004). Still other programmes have advocated using education, for example environmental education (i.e., learning about environmental issues to promote civic duty; Schusler, 2013), or mindfulness-based education (Shechtman, Penuel, & Biegel, 2013), in order to improve young people's physical, intellectual, psychological, and social development. For example, Hawaiian students working together to select, investigate, and act on a local environmental issue were found to improve their critical thinking skills, communication skills, self-confidence, and citizenship competence (Volk & Cheak, 2003). While these programmes all have the shared objective of developing adolescent competencies, the related aims and approaches are significantly different. Thus, further work is needed to provide a framework that situates the shared goal of positive youth development within the various programme-specific goals, methods, and contexts. Such a framework would help minimise variability in the conceptualisation of PYD.

Table 1.2

*Table of Conceptual Models of Positive Development*

Model	Approach	Individual/Internal Assets	Contextual/External Assets	Outcome
<b>Luthar, Cicchetti, and Becker (2000)</b>	Resilience Approach	<ul style="list-style-type: none"> <li>- Cognitive abilities</li> <li>- Easy temperament</li> </ul>	<b>Family Factors</b> <ul style="list-style-type: none"> <li>- Organised family environment</li> <li>- Close parent-child relationships</li> </ul> <b>Social Factors</b> <ul style="list-style-type: none"> <li>- Effective schools</li> <li>- Relationship with caring adult</li> </ul>	<b>Prevention:</b> Increased resilience in adverse conditions
<b>Catalano &amp; Hawkins (1996) Social Development Model</b>	Resilience Approach	<ul style="list-style-type: none"> <li>- Religiosity</li> <li>- Belief in a moral order</li> <li>- Social skills</li> </ul>	<b>Protective Factors</b> <ul style="list-style-type: none"> <li>- Opportunities for prosocial family/school/community involvement</li> </ul>	<b>Prevention:</b> inhibit deviant/problematic behaviour

Conceptual Model	Approach	Individual/Internal Assets	Contextual/External Assets	Outcome
<b>Catalano &amp; Hawkins (1996) continued.</b>		<ul style="list-style-type: none"> <li>- Prosocial Peer attachment</li> <li>- Resilient Temperament</li> <li>- Sociability</li> </ul>	<ul style="list-style-type: none"> <li>- Rewards for prosocial family/school/community involvement</li> <li>- Family attachment</li> </ul>	
<b>Pittman &amp; Irby (1996)</b>	Youth development		<b>Protective Factors</b> <ul style="list-style-type: none"> <li>- Stable programmes</li> <li>- Basic care and services</li> <li>- Healthy relationships with peers and adults</li> <li>- High expectations and standards</li> <li>- Role models, resources and networks</li> <li>- Challenging experiences and opportunities to participate and contribute</li> </ul>	<b>Promotion:</b> Development enhancing factors

Conceptual Model	Approach	Individual/Internal Assets	Contextual/External Assets	Outcome
<b>Pittman &amp; Irby (1996) continued.</b>			High-quality instruction	
<b>Connell , Gambone, &amp; Smith (2001)</b>	Youth Development	<ul style="list-style-type: none"> <li>- The ability to be productive</li> <li>- The ability to connect</li> <li>- The ability to navigate</li> </ul>		<b>Promotion:</b>  Development enhancing factors
<b>Zeldin (1995)/ Zeldin, Kimball, &amp; Price (1995)</b>	Youth Development		<b>Protective/Supportive Factors</b> <ul style="list-style-type: none"> <li>- Access to safe places</li> <li>- Challenging experiences</li> <li>- Caring people</li> </ul>	<b>Promotion:</b>  Development enhancing factors
<b>Benson (1997)</b>	Developmental Assets	<ul style="list-style-type: none"> <li>- Commitment to learning (e.g., achievement</li> </ul>	<b>Supportive Factors</b> <ul style="list-style-type: none"> <li>- Support (e.g., family support, other adult relationships,</li> </ul>	<b>Prevention &amp; Promotion:</b>  Goals;

Conceptual Model	Approach	Individual/Internal Assets	Contextual/External Assets	Outcome
<b>Benson (1997) continued.</b>		<ul style="list-style-type: none"> <li>- motivation, school engagement)</li> <li>- Positive Values (e.g., Caring, Honesty, responsibility)</li> <li>- Social Competencies (e.g., planning and decision-making, resistance skills)</li> <li>- Positive Identity (e.g., Self-esteem, sense of purpose, positive view of personal future)</li> </ul>	<ul style="list-style-type: none"> <li>- caring school climate)</li> <li>- Empowerment (e.g., youth as resources, safety, community values youth)</li> <li>- Boundaries and Expectations (e.g., school boundaries, neighbourhood boundaries, positive peer influence, high expectations)</li> <li>- Constructive use of time (e.g., creative activities, youth programmes, time at home)</li> </ul>	<ul style="list-style-type: none"> <li>- Prevent high risk behaviour</li> <li>- Enhance thriving or resilience</li> <li>- Generalizable Community Change</li> </ul>
<b>Lerner et al., (2005)</b>	5 C's of PYD	<ul style="list-style-type: none"> <li>- Caring</li> <li>- Character</li> <li>- Competence</li> <li>- Confidence</li> </ul>		<b>Prevention &amp; Promotion:</b>  Goals;



Conceptual Model	Approach	Individual/Internal Assets	Contextual/External Assets	Outcome
<b>Lerner et al., (2005) continued</b>		- Connection		<ul style="list-style-type: none"> <li>- Prevent high risk behaviour</li> <li>- Enhance thriving or resilience</li> </ul>

***Five Cs Model of PYD.*** One approach that may provide an overarching framework for PYD is the Five C's Model of Positive Youth Development (Lerner et al., 2005). In contrast to the 40 developmental assets itemised by Benson (2003), which assesses both internal (i.e., individual) and external (i.e., community) assets that facilitate positive development, the “Five C” conceptualisation of PYD uses several measures to provide an overall index of the characteristics of a thriving young person exhibiting positive youth development (Lerner et al., 2005). This model integrates separate indicators of positive youth development (such as self-esteem, academic achievement, peer support, supportive communities, etc.), and proposes that the manifestation of positive development is encapsulated by the latent constructs of the Five Cs; Competence, Confidence, Character, Connection and Caring (see Table 1.3 for definitions).

These latent constructs (i.e., constructs that cannot be measured directly; Byrne, 2010), represent the indicators of the numerous cognitive, behavioural, and social relational elements that theoretically constitute positive youth development (Lerner et al., 2005). This integrated conceptualisation of PYD was based on reviews of adolescent developmental literature (Eccles & Gootman, 2002; Lerner, 2004; Roth & Brooks-Gunn, 2003) and the experience, language and vocabulary of practitioners, parents and young people participating in youth programmes (Lerner et al., 2005; King et al., 2005).

Table 1.3

*Definitions of the 5 C's of Positive Youth Development* (Derived from Lerner [2004] and Roth & Brooks-Gunn [2003]).

Five Cs	Definition
Competence	Positive view of one's actions in domain specific areas including social, academic, cognitive, and vocational. Social competence pertains to interpersonal skills (e.g., conflict resolution). Cognitive competence pertains to cognitive abilities (e.g., decision making). School grades, attendance, and test scores are part of academic competence. Vocational competence involves work habits and career choice explorations.
Confidence	An internal sense of overall positive self-worth and self-efficacy, one's global self-regard, as opposed to domain specific beliefs.
Connection	Positive bonds with people and institutions that are reflected in bidirectional exchanges between the individual and peers, family, school, and community in which both parties contribute to the relationship.
Character	Respect for societal and cultural rules, possession of standards for correct behaviours, a sense of right and wrong (morality) and integrity
Caring	A sense of sympathy and empathy for others

It is useful to compare the Five Cs model of PYD to other leading conceptualisations of PYD. For instance, the Five Cs model differs from the developmental assets model (Benson, 1997) in three fundamental ways. First, the Five Cs model of PYD presents an overarching index of the characteristics of thriving. Thus, the Five Cs model employs several measures (e.g., empathy, self-esteem) as indices of PYD, which is operationalized as the manifestation of caring, character, competence, confidence and connection (see Table 1.3 for definitions). This is in contrast to the developmental assets framework that has attempted to present different types of assets (e.g., positive family communication and resistance skills) as functionally similar. However, these assets are unlikely to provide a similar function in positive development, with some assets more prominent than others in certain contexts (Lerner et al., 2006). The Five Cs model acknowledges that it takes all types of development-enhancing assets (i.e., protective factors, developmental resources) to make up positive development. A key strength of this approach is that, compared to the assets model which attempts to define factors as protective, promoting, or resilient, the Five Cs PYD approach utilises a common terminology of the Five Cs for youth well-being, based on prominent terms used by practitioners, parents and adolescents. Thus, the vocabulary of PYD is accessible to the variety of stakeholders that may value the promotion of positive adolescent development.

Second, by taking the stance of measuring the overarching index of positive development, the PYD approach overcomes questions inherent in the assets model (and other models) of whether, from theoretical and/or measurement perspectives, individual developmental assets can actually be differentiated from constructs related to indicators of PYD (i.e., assets are neither measures nor constructs; Lerner et al., 2009). For example, positive family communication (Benson, 1997) can be conceptualised as an indicator of PYD and also as a higher-order developmental asset, thereby creating problems of independence of measurement constructs. This is not to say that researchers should not be interested in the importance of individual assets in different contexts (i.e., how sensitive different assets are in different contexts), but from the perspective of the assets model, it is unclear whether assets are inputs, outputs or processes. By indexing positive youth development as a higher-order latent variable (i.e., a construct consisting of many observable

indicators that capture the underlying construct of PYD), this model is primarily concerned with the structure and presence (i.e., high or low scores) of PYD, rather than the individual indicators of PYD. Thus, concern of the Five Cs PYD model is with the overall totality of PYD and its key components (i.e., caring, character, competence, confidence, and connection), rather than micro-focus on its multiple indicators.

Third, central to this conceptualisation is that the manifestation of the five C's in turn, leads to the emergence of a "sixth C" of contribution. High scores on the Five Cs are indicative of healthy development that involves positive changes in the relation between a developing person and a community supporting the development of such persons. A young person may be said to be *thriving*, if he or she is involved across time in such healthy, positive relations with his or her community and on the path to "idealized personhood"; an adult status marked by making culturally valued contributions to self, others, and institutions (Csikszentmihalyi & Rathunde, 1998). According to Lerner and colleagues (2003), a commitment to contribution is founded on defining behaviour that supports adaptive person–context interactions, as morally necessary. Based on Youniss' perspective of youth's relationship with society and its role in youth identity development, individuals' moral duty to contribute exists because, as citizens receiving benefits from a social system supporting their individual functioning, it is necessary to be actively engaged in, at least, maintaining and, ideally, enhancing that social system (Youniss, McLellan, & Yates, 1999). Thus, an orientation to contribute to healthy family life and/or community institutions (e.g., a sense of civic duty), are exemplars of thriving youth and contribution (Lerner, Dowling, & Anderson, 2003). For example, a young person displaying the five C's (caring, character, competence, confidence and connection) may advocate for support services for their school (e.g., support for students with intellectual disabilities) as part of student government, thus contributing to their school community. The assets model assumes that the cumulative effect of assets will result in positive outcomes, but does not specify how positive outcomes will emerge. The Five Cs model proposes that high scores in the Five Cs can lead to instantiations of positive behaviours in the individuals' context. While different levels of scores on the Five Cs may be present, it is hypothesised that all Five Cs are present for the development of contribution (Lerner, 2004). Thus, the Five Cs model

of positive youth development (see Figure 1.3) has a strong focus on applied settings, a key feature of youth work.

In summary, as the Five Cs model uses latent constructs, and does not rely on the absence or presence of specific contextual factors (e.g., creative activities), it provides a flexible approach to assessing the manifestation of PYD in diverse contexts. Furthermore, the Five Cs model was developed using the language of practitioners, parents, and young people, hence providing an accessible framework for the variety of stakeholders involved in youth work. In addition, the Five Cs model outlines the manifestation of thriving in youth, and the anticipated role of thriving youth within their social system. Due to this flexibility, accessibility, and view of thriving youth, the Five Cs conceptualisation of PYD provides a suitable framework for the assessment and promotion of PYD across diverse programmes, methods, and contexts.

***Evidence supporting the Five Cs Model of PYD.*** Several findings, both cross-sectional and longitudinal, have provided evidence for Lerner’s “5 Cs” model of development. For example, research has illustrated that PYD is negatively correlated with self-report indices of risk and problem behaviour (Lerner et al., 2005; Gestsdóttir & Lerner, 2009). In addition, the PYD scores of 11 year olds predicted lower depression and risk behaviours 12-months later (Jelicic et al., 2007).

These studies also measured the “sixth C” of youth contribution. A self-report measure of contribution was assessed using four indicators of leadership, service, helping and ideology. These four indicators assess two key components of youth contribution; a behavioural component (i.e., action comprising leadership, service and helping; e.g., taking part in school government), and an ideological component (i.e., contributing based on moral and civic duty [e.g., ideals of equality]; Lerner et al., 2003). Research illustrated that higher-order PYD latent factor scores derived from the Five Cs correlated positively with youth contribution (Lerner et al., 2005). In addition, PYD in 5<sup>th</sup> Grade was found to significantly predict contribution 12-months later (Jelicic et al., 2007), predicting 34% of the variance in contribution scores.

PYD is also related to positive educational outcomes. For example, adolescents who scored higher in the 5 C’s of PYD were 1.6 times more likely to report better grades, and 1.5 times more likely to report higher school engagement

(Jelicic et al., 2007). Further evidence was observed in a longitudinal study following participants from 10 to 16 years old, young people who scored high on the 5 C's measure of PYD had lower drug use, and higher self-reported contribution, civic identity, civic engagement and higher grades (Lerner & Lerner, 2011).

Although this research supports a straightforward relationship between PYD and positive and negative developmental outcomes (e.g., an inverse relation between PYD and risk/problem behaviours), recent findings indicate a more complex pattern of positive and negative developmental trajectories (Lewin-Bizan et al., 2010; Phelps et al., 2007). For example, 5<sup>th</sup>-10<sup>th</sup> grade adolescents (age 10 – 15 years approximately) were found to illustrate four distinct trajectories of PYD scores over time; decreasing, increasing-to-stable-moderate, increasing/decreasing, and increasing-to-stable-high (Lewin-Bizan et al., 2010). The optimal trajectory (i.e., highest PYD scores over time), was the increasing-to-stable-high group. Trajectories were also examined in terms of negative developmental outcomes. Notably, individuals who were in the optimal PYD trajectory group were also most likely to be on a trajectory of risk-taking labelled the “late-increasing/decreasing” risk behaviours group. This risk-behaviour trajectory group reported the second-highest risk-behaviour scores in grade six, seven and ten, and the highest risk-behaviour scores in grades eight and nine. Thus, those individuals in the optimum PYD trajectory also evinced high levels of risk-behaviours, illustrating that PYD and risk-behaviour pathways were not simply inversely related (Lewin-Bizan et al., 2010). These mixed trajectories illustrate a central principle of the developmental systems perspective; that young people are interacting with their environment as they develop. Furthermore, the finding that positive and negative outcomes are not merely inversely related is in line with previous conceptualisations of mental health as consisting of two related, but distinct constructs; flourishing and languishing (Keyes, 2002). Thus, positive and negative outcomes are viewed as conceptually and empirically distinct constructs.

*Previous research assessing relationship of other variables to PYD.* Positive indicators such as hope and intentional self-regulation (as measured by the SOC model; Freud & Baltes, 2002), have also been associated with PYD, providing further evidence for the construct validity of the measure (Schmid et al., 2011a; Schmid, Phelps, & Lerner, 2011b). For instance, higher hopeful future expectations

in grade 7 (approximately 12 years old) predicted higher intentional self-regulation scores in grade 8. Furthermore, both intentional self-regulation and hopeful future expectation scores in grade 8 predicted PYD one-year later (Schmid et al., 2011b). Thus, hopeful future expectations influenced PYD both directly and indirectly via intentional self-regulation. In addition, hopeful expectations for the future and intentional self-regulation also predicted membership in the *optimal* trajectory of PYD scores (trajectory with the highest PYD scores over time) from 7<sup>th</sup>-9<sup>th</sup> grade (Schmid et al., 2011a). Given that hopeful future expectations influence PYD, both directly and indirectly, it is possible that other motivational or attitudinal factors also influence PYD. This line of inquiry is elaborated below.

Overall, despite the research suggesting a more complex, nuanced interaction between positive and negative development, in general, PYD is associated across development with positive indicators such as contribution, school engagement, intentional self-regulation, and hope. Therefore, the empirical evidence supports the premise that those who score higher on PYD, are on a positive developmental trajectory.

***Criticism of the Five Cs Model of PYD.*** Overall, significant empirical work has been conducted on the Five Cs model of PYD. Hence, the Five Cs model is highlighted as the most empirically supported measure of PYD (Heck & Subramaniam, 2009). However, a number of concerns remain. These concerns include 1) concerns about the indicators used to operationalize the Five Cs PYD Model across adolescence; 2) concern about conceptual clarity of the Five Cs; 3) concern about the manifestation of PYD across gender; 4) concerns about the generalizability of a measure of PYD outside of North America.

Central to the conceptualisation of PYD within a developmental systems model of human development, is that the constructs of caring, character, competence, confidence, and connection manifest due to the adaptive interaction of individual and contextual variables. These interactions are captured by the individual indicators used for each PYD component. For example, empathy may be seen as a manifestation of social and environmental supports facilitating the development of an individual's social comparisons, compassion and understanding of a person's situation. Previous research has illustrated how individual-context



interactions can interact to promote or inhibit the development of characteristics such as empathy and guilt (Cornell & Frick, 2007). In particular, children rated as behaviourally inhibited (i.e., shy, withdrawn) by their teachers, and subjected to inconsistent discipline by parents, showed low levels of empathy, while behaviourally inhibited children subjected to authoritarian parenting exhibited higher levels of guilt. Thus, individual-context interactions influence the manifestation of individual indicators of PYD components. However, despite the theoretical foundations and significant empirical work on the Five Cs Model of PYD, concerns remain about the structure of the PYD measure, as a number of iterations of the 5Cs model of PYD have been reported (Bowers et al., 2010; Geldhof et al., 2013; Lerner et al., 2005; Phelps et al., 2009).

The original iteration of the Five Cs Model of PYD contained 19 indicators which loaded onto one of the five first-order latent factors (i.e., the Five Cs; caring, character, competence, confidence, and connection). The five first-order factors then in turn loaded onto a second-order (or higher-order) latent factor (i.e., PYD). This structure was confirmed in a study of adolescents' aged 10-11 year olds ( $M = 10.96$  years;  $N = 982$ ; Jelicic et al., 2007). Further research by Phelps and colleagues (2009) also found evidence of a latent construct of PYD represented by five first-order (or lower-order) constructs representing the Five Cs in grade 6 to 7 (approximately 11-12 years old). However, a number of revisions were made to the indicators of constructs. For example, indicators of character, competence and caring were all revised. For caring, new items were added at wave two data collection (grade 6) to measure empathy (i.e., the Empathic Concern Scale; Davis, 1980) in addition to measuring sympathy (i.e., the Eisenberg Sympathy Scale; Eisenberg et al., 1996). At grade seven, the sympathy items were dropped. In addition, following a review of the original model (Lerner et al., 2005), the competence and character constructs were re-evaluated, as the subscale of school engagement was dropped as an indicator of competence, while an athletic competence subscale was added. Furthermore, the Interpersonal Skills subscale was dropped as an indicator of character, while the subscale Behavioural Conduct was added instead. This revised PYD model was found to be a good model fit (i.e., the data fit the hypothesised model) for younger adolescents (aged approximately 10-13 years).

At the same time, Bowers and colleagues (2010) found that the scales used by Phelps and colleagues (2009) to measure the Five Cs in 5<sup>th</sup> to 7<sup>th</sup> grade (approximately 10-13 years old) did not provide a good model fit when measuring the Five Cs across 8<sup>th</sup>-10<sup>th</sup> grade (i.e., approximately 14-16 years old, *M age* = 15.33 years). Additional changes were made, as the subscale of athletic competence was removed from the competence factor, and the subscale physical appearance was added to confidence. This model was found to fit the observed data reasonably well across 8<sup>th</sup> (CFI = 0.97, RMSEA = .07), 9<sup>th</sup> (CFI = 0.96, RMSEA = .08), and 10<sup>th</sup> grade (CFI = 0.97, RMSEA = .07). Thus, while the structural definition of PYD has been confirmed for 10-16 year olds (i.e., the latent construct of PYD is operationalized by lower-order latent constructs representing the Five Cs), a number of changes have been made to the indicators.

More recently, research has used eight waves of longitudinal data to assess the structure of the Five Cs model of PYD (Geldhof et al., 2013). Separate exploratory factor analyses (EFA) for each of the Five Cs was conducted on a sample of younger (i.e., grade 6; *M age* = 12.01 years) and older adolescents (i.e., grade 11; *M age* = 16.83 years). All 10 EFAs displayed acceptable model fit (i.e., RMSEA < .08, CFI and TLI > .90). In general, the EFAs tended to suggest one factor for each of the subscales used. However, a number of the EFA findings were of note. For instance, reverse-coded items tended to form a method-effect factor. This was observed for the competence and confidence factors in younger adolescents, and confidence and caring factors in older adolescents. In addition, differences were observed in the structure of factors in younger adolescence compared to older adolescence. For example, physical appearance did not load onto a unique factor for younger adolescence<sup>2</sup>. Furthermore, character was represented by three factors in younger adolescents (social conscience, values diversity & conduct behaviour), with personal values and social conscience subscales loading onto the same factor, while in older adolescents, character was represented as five factors: social conscience, values diversity, conduct behaviour, and personal values

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<sup>2</sup> Physical appearance items loaded onto self-worth and a “reverse factor” (i.e., factor accounting for a method-effect of reverse-coded items) for grade 6 adolescence (Geldhof et al., 2013).

divided into two separate factors (i.e., doing what is right even when others disapprove, and willingness to do what is right even when difficult). Thus, the structure of the Five Cs model of PYD was notably different between younger and older adolescents.

Geldhof and colleagues (2013) also tested the assumption that the PYD construct was best represented by a higher-order model (see Figure 1.3). While previous research found a higher-order model to be a good fit to the data (e.g., Phelps et al., 2009; Bowers et al., 2010), results suggested that a higher-order PYD factor fit the data significantly worse than a model without the higher-order PYD factor. Due to these conflicting findings, further research is needed to test the structure of PYD, and also test directly whether a higher-order CFA model fits the data as well as a model without the higher-order PYD construct (i.e., PYD represented by caring, character, competence, confidence and connection).

First, concerns remain about the structure of the PYD model. As outlined above, several iterations of the PYD model have been proposed. Several indicators have been dropped or added as the measure of PYD has developed. In particular, significant differences in the operationalisation of indicators for caring, competence, character, and confidence are observed between younger and older adolescents. Three primary reasons are proposed to explain the different manifestations of the Five Cs. In the case of caring and character, the revised factors were due to researchers' changing conceptions of the constructs (Phelps et al., 2009). For character and competence, changes were theorised to be due to changes within and beyond the individual leading to changes in how positive development is defined (Bowers et al., 2010). For example the orthogenetic principle (Werner, 1957) stipulates that as young people grow and develop, the domains of self-concept become more differentiated and hierarchically integrated across subsequent portions of development (Harter, 1999). Thus, for example, the dropping of athletic competence as an indicator of competence in middle adolescence is consistent with findings that athletic competence is the least likely domain to be related to one's overall self-concept (Harter, 1999). Another potential factor underlying the changing model structure is the use of different samples (Bowers et al., 2010; Phelps et al., 2009). However, it is important to assess the measurement of PYD structure and indicators of the Five Cs in independent samples. Youth are likely to draw upon

different internal and external resources within settings to promote positive development. It is important then, that the indicators used to measure positive development, are robust across settings. In order to provide parents, teachers, and youth development practitioners with a tool to index positive development in young people, the measure of PYD must be applicable across independent samples. This may be achieved by extending the measurement of the Five Cs model of PYD to an Irish sample and testing the validity against patterns of covariation with positive and negative indices of development.

A second concern exists regarding the conceptual clarity of the Five Cs PYD model. For example, in the original depiction of the 5 C's model with 10-11 year olds, there were moderate to high inter-factor correlations (e.g., factors of competence, confidence, character and connection were highly correlated, ranging from .63 to .75; Lerner et al., 2005). This implies that a substantial amount of conceptual overlap exists among factors. In fact, Lerner and colleagues (2005) acknowledged that some of the Cs may represent the same latent construct and that additional higher-order factors may exist. Using the same 4-H study database used by Lerner and colleagues (2005), this problem of high inter-factor correlations was also observed by Jellicic and colleagues (2007). In addition to high correlations between lower-order factors (i.e., the "Cs"), inter-correlations between indicators were also observed in the original and revised Five Cs models (Bowers et al., 2010; Phelps et al., 2009; Lerner et al., 2005). The inter-correlations between indicators also suggest that other variables not included in the model may influence the manifestation of positive development in young people. In order to assess whether these inter-correlations are substantive (e.g., other variables may be needed to explain the variance) or methodological (e.g., inadequate application of CFA), it is necessary to cross-validate the Five Cs model with an independent sample of adolescents.

Third, there is concern regarding the manifestation across gender. Notable differences in gender profiles of PYD have been observed. For example, higher PYD scores have been observed in females compared to males (Lerner et al., 2005; Phelps, et al., 2009). Looking at developmental trajectories from 5<sup>th</sup> – 8<sup>th</sup> Grade (approximately 10-14 years old), significant gender differences were found, with females significantly more likely than males to be in the optimal trajectory group for

PYD (Zimmerman, Phelps, & Lerner, 2008). The observed gender differences are in line with previous research showing females score higher on a number of interpersonal character strengths such as social intelligence and kindness (Linley et al., 2007). Gender differences have also been consistently found regarding empathy and self-esteem, with females scoring higher than males (e.g., Litvack-Miller, McDougall, & Romney, 1997; McMullin & Cairney, 2004; Moksnes, Moljord, Espnes, & Byrne, 2010). However, prior work has only examined gender differences in terms of overall PYD scores. Gender differences in how indicators of PYD (e.g., character subscale of positive identity) function for males and females have not been examined. Thus, it is important to assess whether the Five Cs model is measuring the same construct for both male and females. If the measure is found to function differently across gender, then gender comparisons of PYD scores will be flawed. If the Five Cs measure is found to measure PYD across gender groups, then these differences may inform future PYD programme development. Therefore future research is needed to assess how indicators of PYD function across gender.

Finally, concerns arise about the generalisability of the Five Cs measure of PYD outside North America. Recent work in Ireland used the PYD model to evaluate a youth citizenship programme (Brady et al., 2011). This programme conceptualised PYD as the presence of positive indicators of development (i.e., caring, character, competence, confidence and connection; Lerner et al, 2005). However, while this youth programme used the PYD model, no assessment has been made of the factor structure, reliability, or validity of the Five Cs measure of PYD in Ireland. In fact, no work has been carried out to test the quality of these indicators outside of North America. All of the research conducted using the Five Cs model of PYD has been part of a single large-scale study called the 4-H study of PYD (Lerner & Lerner, 2011). While using a large-scale sample ( $N = 7,071$ ) over eight time-points and a diverse population, it is necessary to test the generalizability of the findings.

At a substantive level, different populations (e.g., Irish adolescents) may have different interpretations of specific items assessing PYD (van de Vijver & Poortinga, 1997). For example, the idea of “the good life” may mean different things to a teenager living in a poor neighbourhood in New York compared to an Irish teenager living on a farm in the West of Ireland. This may lead to different interpretations of

PYD overall. In any discussion of developmental outcomes, attention must be paid to how the goals of development are defined and operationalized. In the most general sense, the aim of research and practice in youth development and problem prevention is to reduce problem behaviours and enhance positive development among youth (Eccles & Gootman, 2002). However, difficulties can arise when individuals differ in their opinions as to what may constitute problem behaviour or a display of positive development. For example, assertiveness usually is regarded as a sign of competence in Western society, but it may also be interpreted as a problem behaviour (e.g., if youth assert their right to protest) in Western and in other cultures (Garcia Coll, Meyer, & Brillion, 1995). Therefore, it is important to recognize that social, cultural, and historical forces play a large role in any evaluation of outcomes as positive or negative (Brodsky, 1997; Luthar, 1993).

In addition, it is worth noting that while there may be many commonalities in the forms of PYD across cultures (e.g., volunteering), the developmental emergence (i.e., when behaviours emerge) and frequency (i.e., how often behaviours emerge) of PYD may differ. This may be due to cultural and societal differences in prosocial behavioural practices. For example, in terms of frequency of behaviours, international figures indicate that there are higher levels of both volunteering and helping behaviours in the US compared to Ireland (Better Life Index, 2013). However, as previously outlined, all of the empirical support for the Five Cs PYD framework has been conducted in North American populations (e.g., Bowers et al., 2010; Lerner et al., 2005, Phelps et al., 2009). Extending the research of PYD to European samples, and in particular Irish adolescents, is therefore crucial in order to provide a robust and useful tool for research and applied work with Irish young people.

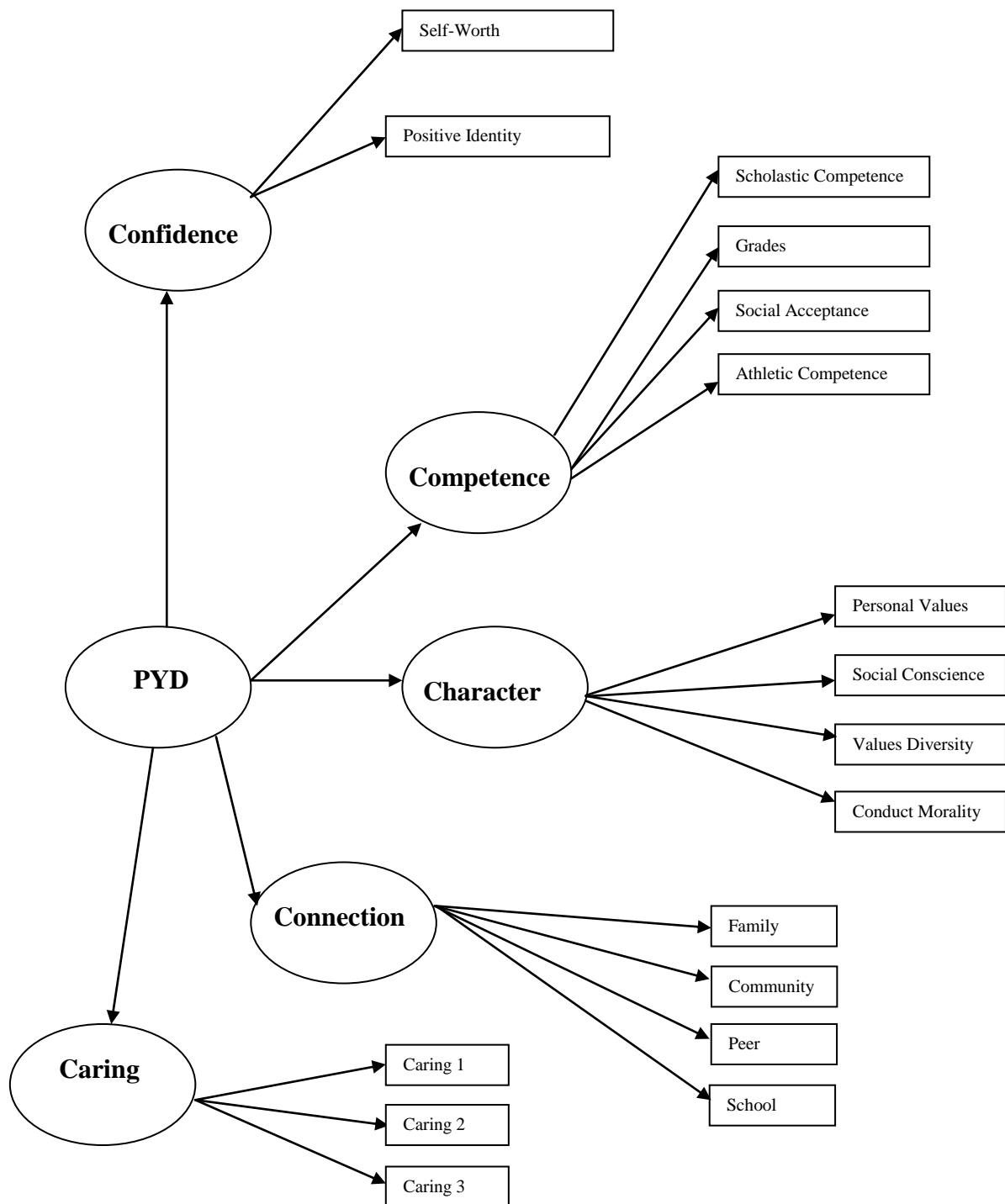


Figure 1.3

*5Cs Model of Positive youth Development* (Lerner et al., 2005).

## 1.6 Conclusions

Positive Youth Development (PYD) has emerged at the fore of current adolescent research and policy (King et al., 2005). Central to PYD theory is the assumption that changes across the lifespan occur through interactions between the individual and multiple levels of context (e.g., society, culture, environment, history). These interactions are interdependent and shape development as part of an integrated system (Elder & Shanahan, 2006).

Positive development is defined as the positive alignment between the multiple levels of organisation and the individual, leading to mutually beneficial relations, termed *adaptive regulations* (Brandtstädter, 2006). For example, adaptive regulations may occur in the instance of providing young people with the opportunity to contribute to and take leadership positions in community efforts to improve social life (e.g., opportunities to help allocate funding to community charities), which in turn is dependent on a young person's moral identity. When these mutually adaptive regulations exist, healthy, positive individual development can occur (e.g., increased self-esteem). Thus, adaptive regulations benefit both individual development and the social context that supports the development of the young person (Lerner, 2004).

The consequences of adaptive developmental regulations, particularly when frequent and sustained, may be evidenced at both individual and social levels. For example, adaptive developmental regulations may manifest in the form of thriving individuals and reductions in health-compromising behaviours (Benson et al., 2006; Lerner, 2004). The measurement of positive youth development may be conceptualised then, as the measurement of instances of adaptive developmental regulations (i.e., the Five Cs).

A number of concerns with the measurement of PYD, and in particular the Five Cs model of PYD, have been highlighted. These include concerns over the structure, applicability, and generalizability of the Five Cs model of PYD outside of a North American context. Due to the issues outlined, future research is needed on the construct of PYD.

A key consideration is that PYD research and practice must give due consideration to the selection and justification of the operationalisation of the positive youth development construct. In the absence of any universally used



definition of developmental success (e.g., thriving, flourishing, well-being), research must clearly elucidate the approach they select to define successful and unsuccessful developmental outcomes, providing coherent justifications on both conceptual and empirical grounds.

In addition, it is also important to assess whether the measurement of positive development is meaningful in different contexts, and whether positive development manifests itself in the same way across settings. Therefore, an aim of the current study is to extend the measurement of PYD to an Irish context, and evaluate the structure of PYD and its relationship to positive and negative indices of development in Irish adolescents. The aim of the current research is to provide clarity on the concept and measurement of PYD in an Irish context. By assessing the Five Cs model of PYD in Irish adolescents, we extend PYD research to an international context. Examining the validity and reliability of the Five Cs measure is necessary in order to advocate the use of robust measurement instruments to track social progress and the impact of youth policies and programmes in Ireland and elsewhere.

## **2. Chapter Two**

### **Adolescent Self-Regulation and Positive Youth Development**

#### **2.1 Chapter overview**

The purpose of this chapter is to outline the role of self-regulation in positive adolescent development. A brief outline of the development of self-regulation in childhood is followed by an overview of self-regulation in adolescence. Central to the chapter is a detailed examination of the Selection, Optimisation, and Compensation (SOC) model of intentional self-regulation and its role in positive youth development. Following this discussion, a critique of current research on self-regulation is presented, outlining conscious and non-conscious aspects of intentional self-regulation, and their relationship with positive adolescent development. This is followed by a central facet of this thesis; the proposed extended model of adolescent self-regulation that incorporates motivational, emotional, and attitudinal factors that may impact goal-directed behaviours and PYD.

#### **2.2 Developmental Systems and Self-Regulation**

As outlined in Chapter One, developmental systems theories of human development are central to current adolescent research and policy (King et al., 2005). Leading conceptualisations of positive adolescent development such as Lerner's 5Cs Model of PYD (Lerner et al., 2005) take a developmental systems approach that emphasise positive, healthy development trajectories across the lifespan are the result of mutually beneficial relations between the developing person and multiple aspects of their context that support and promote healthy growth (Benson et al., 2006). Positive development is defined as the positive alignment between the multiple levels of organisation (e.g., family, community) and the individual, leading to mutually beneficial relations, termed *adaptive regulations* (Brandtstädter, 2006).

In order for the relationships between individuals and their contexts (e.g., school) to be mutually beneficial, individuals are required to make decisions about how to satisfy both personal and environmental demands. The decisions made by the individual can subsequently promote positive changes in components of the relationship. For example, an adolescent may wish to spend more time playing sports with friends, while demands at school require more time alone learning

mathematics for an exam. A decision to increase study prior to the exam may lead to reduced exam anxiety, enhanced exam performance, and better career prospects in line with long term goals. However, a number of individual and contextual factors may be taken into account before such a decision is made (e.g., immediate vs. long-term rewards, parental expectations, peer expectations, role of exercise in reducing stress). Therefore, within a complex decision-making situation, individuals must select, create, or change their contexts depending on the requirement of each situation (Bandura, 2000; Brandtstädter, 2006; Demetriou, 2000; Grolnick et al., 1997).

According to developmental systems theories, by constantly making choices and taking actions that influence the context that, in turn, is influencing them, each person, is a producer of their own development trajectory (e.g., Ebner, Freund, & Baltes, 2006). These actions, which are contextualised goal-directed behaviours aimed at harmonising demands and resources in the environment with personal goals, are labelled *intentional self-regulations* that possess the ultimate aim of attaining better functioning and enhancing self-development (Gestsdóttir & Lerner, 2008; see Figure 2.1). Thus, intentional self-regulations are central to understanding how individuals take actions that create adaptive regulations, and subsequent positive development. In the forthcoming sections, an overview of self-regulation is presented, followed by a developmental account of the emerging aspects of self-regulation in childhood and research on self-regulation in adolescence. The theoretical and empirical evidence suggesting a link between intentional self-regulation and positive development is subsequently critiqued, with a view to extending the present model of adolescent self-regulation to incorporate additional factors.

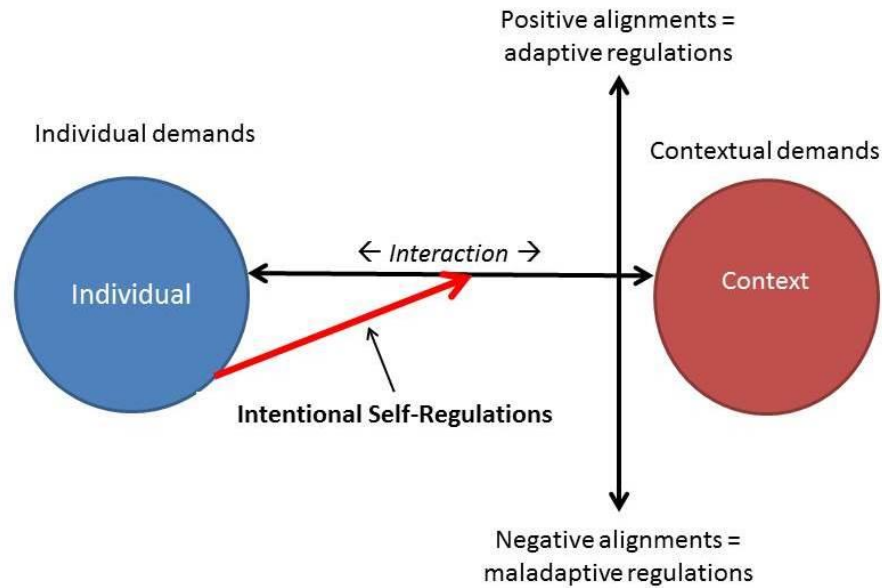


Figure 2.1

*Graphical depiction of the influence of intentional self-regulations on individual-context relations*

### 2.3 Overview of Self-regulation

A key proposal of the PYD perspective is that the dynamic interrelations between the individual and the multiple levels of context are the basic processes of development and are called developmental regulations (Brandstädter, 2006; Overton, 2006). The mechanism through which an individual contributes to the interaction between themselves and their context is called intentional self-regulation (Lerner, 2004). Thus, self-regulation is central to understanding interactions between an individual and their context, and subsequent positive development. In the following section, a definition of self-regulation is presented.

**2.3.1 Definitions of Self-Regulation.** Definitions of self-regulation frequently differentiate between the abilities to regulate emotion, attention, and behaviour. For example, self-regulation has been used to refer to self-control, specifically, by referring to the individual's ability to override behaviours, thoughts, or emotions, and replace them with alternative actions or responses (Baumeister & Heatherton, 1996). More broadly, Raffaelli and colleagues (2005) define self-

regulation as “the internally-directed capacity to regulate affect, attention, and behaviour to respond effectively to both internal and environmental demands” (p. 54). In turn, Demetriou (2000) defines self-regulation as involving “both individuals’ ability to set goals about their own functioning or about the environment and direct their mental and physical functioning so that these goals can be attained” (p. 214). A more comprehensive definition of self-regulation is provided by Moilanen (2007):

“[Self-regulation is] the ability to flexibly activate, monitor, inhibit, persevere and/or adapt one’s behaviour, attention, emotions and cognitive strategies in response to direction from internal cues, environmental stimuli and feedback from others, in an attempt to attain personally-relevant goals” (Moilanen, 2007, p. 835).

Baumeister and Heatherton’s (1996) definition presents a narrow view of self-regulation insofar as it refers specifically to conscious impulse control. This definition does not incorporate any aspect of the environment that may influence an individual’s behaviour, and presents a unidirectional (i.e., individual controlling behaviour) relationship between an individual and their selected goal. In short, the definition by Baumeister and Heatherton (1996) does not fit within a developmental systems theory of human development. In contrast, other definitions consistently incorporate both individual ability (to regulate behaviour, attention and affect), and internal and external demands (Demetriou, 2000; Raffaelli et al., 2005; Moilanen, 2007). In addition, the conception of self-regulation by Demetriou (2000), and to a lesser degree Moilanen (2007), are consistent with the framework of developmental systems theories of human development and the definition of intentional self-regulation (Gestsdottir & Lerner, 2008), as it involves actions that are aimed at changing a part of a developmental system (e.g., an individual, a situation) to achieve a predetermined goal. In line with the concept of developmental regulations (i.e., the dynamic interrelations between the individual and the multiple levels of context) and the role of the individual as a product and producer of their environment (Ebner et al., 2006), the central idea from these definitions of self-regulation is: 1) that self-regulated behaviour is goal-directed; 2) that selected goals are based on the individuals representations of themselves and their environment; and 3) that individual abilities in relation to behaviour, attention, emotions, and cognitive

strategies are central for balancing the demands and resources in the environment with personal goals.

Intentional self-regulation is distinguished here from *organismic self-regulations*, which are defined as broad, consistent biologically-based attributes of an individual, that are under limited or no control of the individual (Shonkoff & Phillips, 2000). Examples of organismic regulation include pubertal timing, circadian rhythms, and biological reactivity (see Figure 2.2).

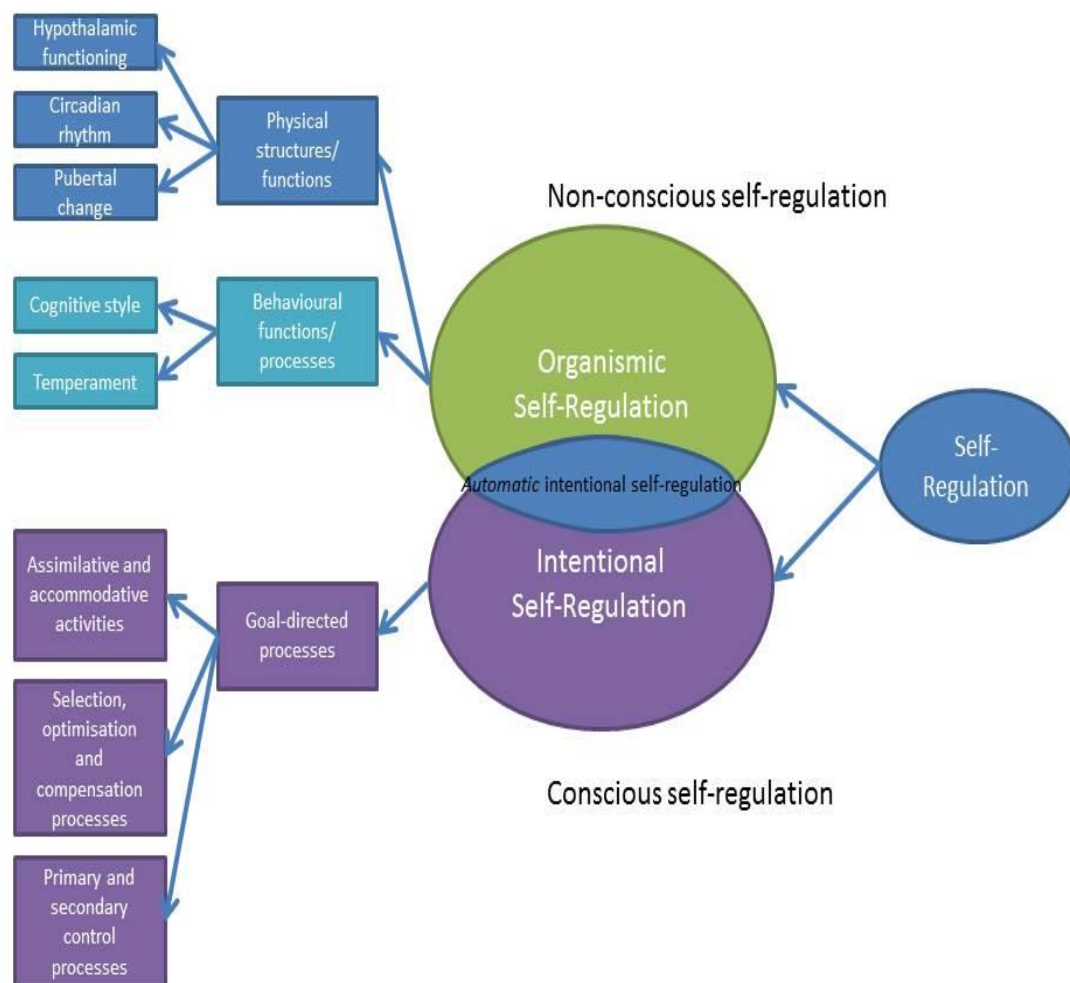


Figure 2.2

*Examples of organismic & intentional components of self-regulation* (adapted from Gestsdóttir & Lerner, 2008)

Gestsdóttir and Lerner (2008) outline the role of intentionality and consciousness in intentional self-regulation. Intentional self-regulation implies that self-regulatory processes (e.g., controlling emotions through primary control processes), can be actively selected and controlled by the individual, and therefore is available to consciousness. This can be seen in domains such as academic or occupation goals, where people make thoughtful, intentional plans and make choices, select and utilise strategies, and monitor progress towards a given goal. However, while conscious goal-directed behaviours are the typical type of behaviour in intentional self-regulation, behaviours such as goal selection, goal pursuit, and self-corrections can all also function at a non-conscious or, at least, at an automatic level. Thus, organismic and intentional self-regulations overlap (Gestsdóttir & Lerner, 2008).

An example of automatic intentional self-regulations can be seen in previous research illustrating that significant others can have non-conscious effects on self-regulation by serving as triggers for the goals that the individual commonly pursues with that significant other (Fitzsimons & Bargh, 2003). Specifically, in a study by Fitzsimons and Bargh (2003), at the start of a semester approximately half of college students reported wanting to please their mothers by achieving academically. Two months later, students participated in a verbal achievement task. Before the task, participants were either asked questions about their mothers or neutral non-interpersonal questions. Participants who were primed with the interpersonal questions, which activated the interpersonal goals that students reported pursuing with their mothers (i.e., achieving academically), outperformed control participants on the subsequent verbal achievement task. Importantly, priming only affected participants who had previously reported a goal to please their mothers by achieving academically (Fitzsimons & Bargh, 2003). Thus, significant others can have non-conscious effects on intentional self-regulation.

Other non-conscious effects on intentional self-regulation have been found to be induced by characteristics of the social environment (e.g., being seated in a position of relative power; Bargh & Raymond, 1995), and through observing the behaviours of others (i.e., goal contagion; Aarts, Gollwitzer, & Hassin, 2004).

Similarly, the social intuitionist model (Haidt, 2001) describes how fast and automatic intuitions (i.e., non-conscious thoughts) are the primary source of moral judgements.

The conscious and non-conscious aspects of intentional self-regulation can be conceptualised in a *dual process* model of decision-making (e.g., Casey, Getz & Galvan, 2008; Gibbons & Gerrard, 1995; Kahneman, 2011; Metcalfe & Mischel, 1999; Reyna, 2004; Steinberg, 2008). It is now widely accepted in cognitive and social psychology that there are often two processing systems at work when a person is making decisions, judgements, or solving problems (Haidt, 2001). The common feature of these dual process models is that decision-making is subject to two systems; a reasoned route of decision-making, and a reactive route of decision-making (Reyna & Farley, 2006). These systems typically run in parallel and are capable of reaching different conclusions. The reasoned route of decision-making is based on an expectancy-value perspective, where beliefs and attitudes predict behaviour (Reyna & Rivers, 2008). This route is characterised by slow, effortful, and intentional processes (Epstein, 1994; Haidt, 2001). On the other hand, the reactive-route of decision-making incorporates less deliberate, fast, decision-making that does not demand attentional processes (Epstein, 1994; Haidt, 2001). One example of a dual-process model is the prototype/willingness model (Gibbons & Gerrard, 1995). In addition to a reasoned pathway (which includes attitudes and subjective norms as predictors of intention), this model also proposes a social reaction pathway that is image-based and involves heuristic processing for decision-making (Gibbons & Gerrard, 1995). For instance, images of a behaviour (e.g., smoking) can have positive or negative associations (i.e., values); the more favourable an image (e.g., of a smoker), the more willing the adolescent will be to engage in the behaviour, without consciously analysing the pros and cons of the behaviour (e.g., smoking; Gerrard et al., 2008). Thus, the values associated with a behaviour may influence behaviour by a reactive, heuristic process, rather than a conscious reasoned process, as prototypes provide motivational impetus to acquire



the characteristics associated with socially accepted, and often emotionally charged, behaviours (Gerrard et al., 2002).

The premise for the reactive<sup>3</sup> system in the intuitive, heuristic pathway of decision-making is founded on the ability to evaluate affect automatically (Zajonc, 1980). In this system, feeling and thought are perceived to some extent as separate systems with separate biological bases. The evaluation of affect occurs quickly, automatically, and pervasively as an integral part of perception. The affect system is triggered more quickly than the reasoned system, and is found to be more powerful and irrevocable when the two systems yield conflicting judgements (Zajonc, 1980). For instance, previous research has illustrated that affective processing can occur within a quarter second of stimulus presentation (Bargh, Chaiken, Raymond, & Hynes, 1996). Thus, intentional self-regulation, while characterised by goal-directed behaviours, may include conscious and non-conscious goal selection, goal pursuit, and self-corrections due to the dual-process model of decision-making.

Looking at an adolescent-specific dual-process model of decision-making, Steinberg (2004) similarly differentiates between two systems; a “cognitive-control” system (e.g., intentional self-regulation, planning), and a “socio-emotional” system (e.g., resistance to peer influence, emotion regulation). This developmental neuroscience perspective proposes that the social reactive system increases in sensitivity to social and emotional stimuli during puberty in early adolescence, explaining the increased salience of social rewards to early adolescents compared to younger children (Steinberg, 2004). On the other hand, the reasoned route of decision-making (e.g., the cognitive-control network) representing functions such as self-regulation and planning (i.e., goal-directed behaviour), matures gradually during adolescence and young adulthood largely independent of puberty (Steinberg, 2004; Steinberg, 2007). The differential development of these systems is highlighted as underlying psychosocial maturity in adolescence (Steinberg, 2004). Therefore,

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<sup>3</sup> The “reactive” decision-making route has been labelled differently in different models, for example, the “intuitive system” (Haidt, 2001), or the “socio-emotional system” (Steinberg, 2008). Although labelled differently, all the dual process models generally refer to a fast, reactive, system and a slower, analytical system.

adolescence is perceived as a period of vulnerability to risk-taking as the heightened sensitivity to social and emotional stimuli is present, while self-regulation in the cognitive control system is not strong enough to impose regulatory control (Steinberg, 2004; Steinberg, 2008). As the cognitive-control network matures during adolescence, regulatory effectiveness such as emotion regulation and/or resistance to peer influence, is proposed to increase, so that by adulthood, inclinations towards risk-taking are diminished (Steinberg, 2004). This model highlights the different roles of social and emotional regulation (i.e., reactive behaviours), and intentional self-regulation (i.e., reasoned behaviours), during adolescence. Thus, several lines of thought converge on the premise that adolescent goal-directed behaviour is a function of cognitive (i.e., reflective), and social and emotional (i.e., heuristic) processes (Keating, 2004). Adolescent behaviour can therefore be viewed as subject to two different systems of decision-making; a conscious, reasoned, cognitive system, and a non-conscious, reactive, socio-emotional system.

Much of the prior research on adolescent decision-making has operated on the assumption that the decision to engage in behaviours (e.g., exercise, volunteering) is based on intentional and reasoned cognitive processes (e.g., Blue, 1995; Greenslade & White, 2005; Okun & Sloane, 2002). However, most decisions are not determined solely by systematic reasoning, but also by reactionary processes (Gerrard et al., 2008). Indeed, for many decisions, heuristics and immediate impulses may exert a larger influence over the likelihood of engaging in an action. For example, whereas reasoned-choice models tend to explain around 31% of the variance in health-related behaviour (Armitage & Conner, 2001), models of both reasoned and reactionary processes can account for up to 79% of the variance in behaviour (Gerrard et al., 2002).

The foundations for adolescent self-regulation develop during infancy and childhood (Posner & Rothbart, 2000; Rothbart, Sheese, & Posner, 2007; Shonkoff & Phillips, 2000). Therefore, before examining adolescent self-regulation, it is important to outline aspects of childhood self-regulation development that lay the foundation for more internal, focused, and intentional forms of self-regulation that emerge later. The key regulatory processes that provide the foundation for adolescent intentional self-regulation include abilities to form representations of oneself and others, and the ability to self-monitor and self-correct. These key

abilities enable individuals to make choices, plan actions that are appropriate to reach their goals, and regulate the execution of their actions (Bandura, 2001; Brandstädter, 2006).

**2.3.2 Development of Self-Regulation in Childhood.** Prior to the adolescent period, changes in self-regulation primarily encompass changes in controlling emotions, attention, and behaviour, including self-monitoring and response inhibition (Gestsdottir & Lerner, 2008). These changes are facilitated by changes in the brain and cognitive development (Demetriou, 2000; Shonkoff & Phillips, 2000). Two central aspects of self-regulation facilitate the development of goal-directed behaviour (i.e., intentional self-regulation) prior to adolescence; the development of self-representations and executive functioning.

**Self-representations.** A central aspect of self-regulation is the development of self-representation (Demetriou, 2000). Mental representations are necessary for self-regulation as they facilitate goal selection, monitoring of progress, and the development of problem-solving strategies. Infants first develop signs of a self-concept at 15 months, as they begin to recognise themselves in a mirror (Lewis & Brooks-Gunn, 1979). The development of self-representations is outlined in Table 2.1. During early preschool years, more differentiated representations begin to be developed, usually depending on observable characteristics (e.g., I have blue eyes). In middle-late childhood, higher order generalisations are possible due to the ability to build representational systems, which allow trait labels to be used that integrate self-evaluations and self-representations (e.g., I am clever because I am good at Irish and Maths).

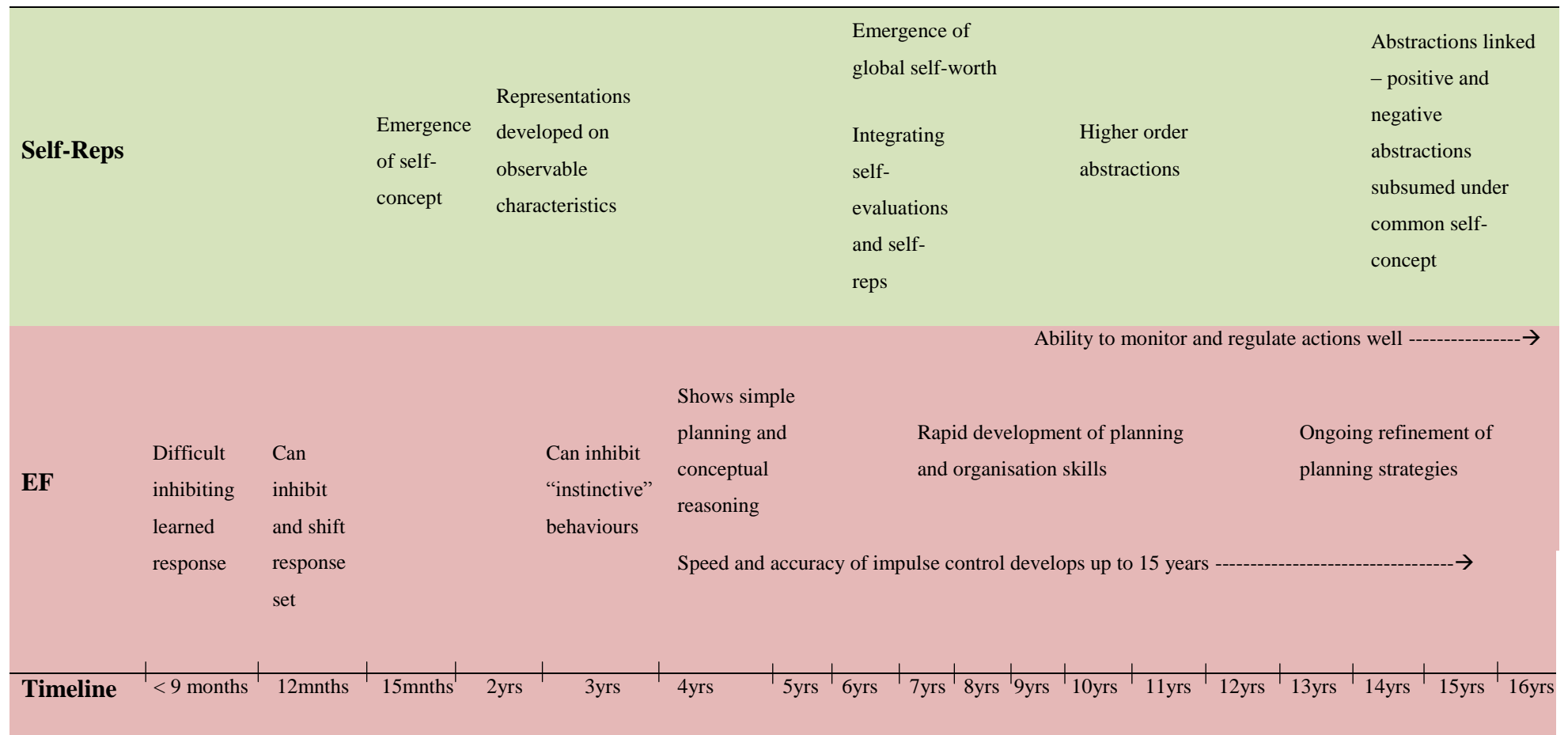
In addition, the concept of global self-worth appears in middle-late childhood (Harter, 1990), and is found to be predicted by perceived competence (e.g., Harter, 1993). This global self-worth functions as a general self-monitoring and self-evaluation agent that can integrate the various aspects of self-evaluations (Demetriou, 2000). The abilities to self-monitor and self-correct are central to self-regulation. Self-monitoring involves an individual's awareness of their present state and comparison between their present state with a set goal (Gestsdóttir & Lerner, 2008). Self-monitoring enables the individual to identify conflicts and discrepancies in the transactions between the developing individual and their context. Previous

researchers have proposed that adolescence is a period of time during which individual's sensitivity and overall self-monitoring is heightened (Erikson, 1950; Manning & Allen, 1987). Self-correction abilities guide a person toward a chosen goal when there is a discrepancy between the present state and the set goal (Demetriou, 2000). Thus, self-regulation is generally aimed at reducing such discrepancies that occur between factual or perceived courses of personal development and the person's normative conception of self and future development (Brandstädter, 2006). In early adolescence, the traits of the previous phase are organised into higher order abstractions about the self as thought can now conceive of the abstract (Fischer, 1980; e.g., I am intelligent because I am smart and creative). However, abstractions about the self are not yet well integrated (Case, 1992; Fischer, 1980). Thus in middle adolescence, abstractions begin to be linked, and positive and negative abstractions can be subsumed under a common self-concept that associates the positive and negative abstractions with different domains; for example, an adolescent can be extroverted and introverted depending on different types of activities, preferences, and orientations (e.g., extroverted when with friends, introverted when with a group of strangers).

The development of self-representations, self-monitoring and self-correcting, facilitate abstract thinking, goal selection, monitoring of progress, and the development of problem-solving strategies, in short, a repertoire of skills that are necessary for self-regulation. As an individual develops, self-representations are necessary in order to identify the conflicts and discrepancies in the transactions between the developing individual and their context. Subsequently, self-regulation is generally aimed at reducing such discrepancies that occur between factual or perceived courses of personal development and the person's normative conception of self and future development (Brandstädter, 2006). Thus self-representations are central to self-regulation.

Table 2.1

*Development of self-representations (Self-reps) and executive functioning (EF) in childhood and adolescence.*



**Executive Functioning.** A central component necessary for the development of self-regulation in childhood is executive functioning. Executive functioning is an umbrella term for the complex cognitive processes that serve ongoing, goal-directed behaviours (Meltzer, 2011). For example, one definition of executive functioning highlighted three separate, but related components; attentional control (selective attention and sustained attention); cognitive flexibility (working memory, attentional shift, self-monitoring, and conceptual transfer); and goal setting (initiating, planning, problem solving, and strategic behaviour; Anderson, Anderson, Northam, Jacobs, & Catroppa, 2001). Different theories and models still compete to explain the development of executive function processes (Meltzer, 2011). For example, the development of executive functioning has been explained from a multiple intelligences perspective (Moran & Gardner, 2007), a neuropsychological modular perspective (Baddeley, 1998), and a cognitive development perspective (e.g., skill theory; Fischer, 1980). Fischer's skill theory provides a framework that incorporates the interacting relations between an individual and context, and therefore is a useful framework for discussing the development of executive functioning.

Fischer's skill theory is a theory of cognitive development which focuses on explaining the control and construction of hierarchies of skills (Fischer, 1980). Skill is the capacity to act in an organised way in a specific context, thus, skills are both action-based and context-specific (Fischer & Bidell, 2006). A skill is defined as a behavioural unit (e.g., playing basketball) comprising one or more sets, a set is defined as an action (e.g., motor-coordination, balance, memory, communication etc.), something that organisms can do to an object (Fischer, 1980). A person's action involves a set because an action is always applied to something and, therefore, must be adapted to that object. Therefore, sets and skills comprise characteristics of the participant as well as the object. Following from this, skills are understood as being task-specific, context-specific and culturally defined (Fischer & Bidell, 2006). Applying this to PYD, a skill may be a behavioural unit such as helping to cook family dinner, comprising of sets of actions (e.g., communication, balance, motor-coordination, memory), which are applied to an object (e.g., the food). This then comprises characteristics of the participant (e.g., cognitive ability, temperament, empathy, motivation, values), and the object (e.g., food). Therefore, skills involved

in positive development are derived from task-specific, context-specific, and culturally-defined behavioural units and sets, that act in a positive, organised way.

Development of skill is a process in which a child, adolescent or adult masters specific skills, builds other specific skills on them, and transfers skills from one domain to another (Fischer, 1980; see Figure 2.3). The development process is task-dependent and progression across different task domains can easily be dissynchronous (i.e., develop at different rates). For example, an adolescent learning to code website applications can display high levels of proficiency in terms of computer literacy, but low levels of skill in terms of mathematical coding. In general skills develop step by step (e.g., learning simple coding commands), and by combining and differentiating skills from one level the person can form skills at the next higher level (e.g., combining multiple simple coding commands to produce a complex command), with levels specifying skills of gradually increasing complexity (Fischer, 1980). In this hierarchically structured way, development of a number of processes, such as cognitive and emotional control, social behaviour and thinking, can be construed in terms of skill levels of increasingly complex forms (Fischer, 1980). The development of skill levels, for example of cognitive development, is viewed as occurring in spurts (Fischer, 2008; see Figure 2.4).

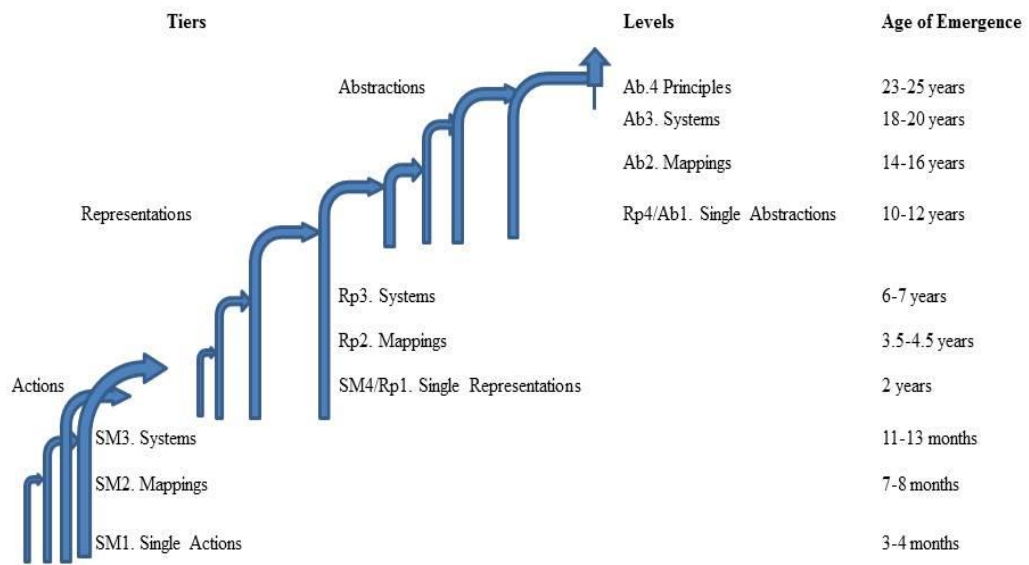


Figure 2.3

*Development cycles of levels and tiers of skills (Fischer, 1980; Fischer & Hogan, 1989; Fischer & Bidell, 2006).*

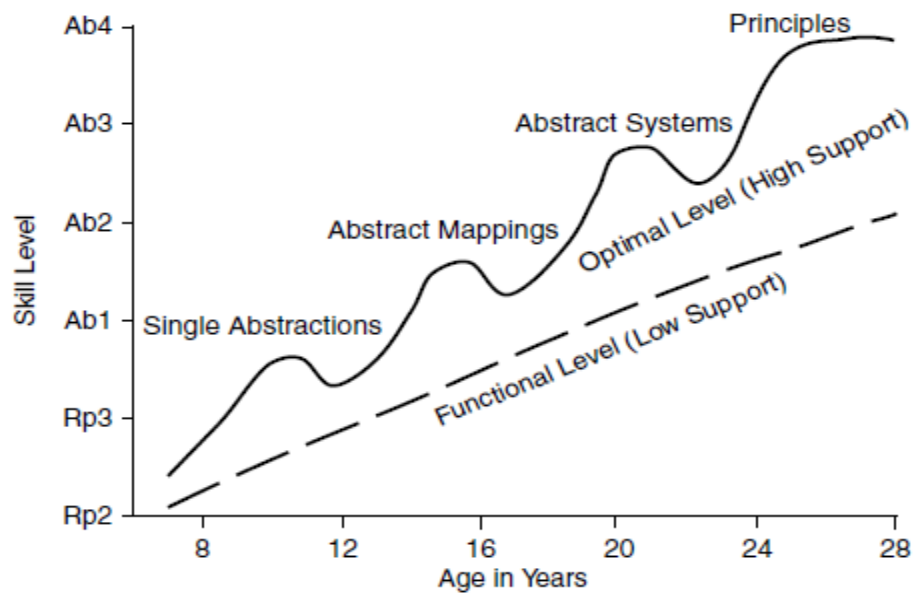


Figure 2.4

*Cyclical spurts for cognitive development under optimal conditions (Fischer, 2008)*



The skills hierarchy framework outlined by Fischer (1980) can be seen in the development of discrete aspects of executive functioning. For instance, in the development of attentional control, infants younger than nine months of age have difficulty in inhibiting previously learned responses (e.g., where a desired object is hidden), but by 12 months most infants can inhibit learned behaviours and shift to a new response set (e.g., changes in where a desired object is hidden; Diamond & Doar, 1989). By three years of age, children can inhibit “instinctive” behaviour reasonably well (e.g., reacting to a loud noise; Espy, 1997). Thus in line with Fischer’s hierarchy framework, progression is made from an inability to inhibit learned responses (less than 9 months), to ability to inhibit learning responses (12 months), to inhibiting “unlearned” or instinctive responses (by 36 months). Further development of behavioural control is seen as speed and accuracy of impulse control tasks and can be observed up to mid-adolescence (i.e., 15 years of age; Fischer et al., 1997; Luna et al., 2004). Building on previous “skills” of behavioural control, children aged nine years and older tend to monitor (e.g., “I’m good at this”) and regulate their actions well, thereby illustrating abstract skills that are necessarily developed from skills lower in the hierarchy (e.g., response inhibition; simple representations of action; Anderson, Anderson, & Lajoie, 1996; Anderson et al., 2000; Fischer, 1980).

Similarly, the development of goal setting in childhood can also have a hierarchical organisation (see Table 2.1). Goal setting is a key component of executive functioning and subsequently self-regulation. For instance, where younger children struggle to plan and organize actions in advance, simple planning skills, such as planning moves in a Tower of Hanoi task, are exhibited by 4-year olds (Welsh, Pennington, & Groisser, 1991). Similarly, 3-year olds fail simple conceptual reasoning tasks compared to 4-year olds. For example, when given a choice of three cards, and asked to select two cards matched on a single dimension (e.g., colour), 3-year olds performed poorly, whereas, by 4 years of age, children are capable of selecting two cards on one dimension, and then generating new concepts when asked to select cards on a different dimension (e.g., shape on card; Jacques & Zelazo, 2001).

Further development of executive function skills is seen as young children utilize simple strategies for planning and organisation. For example, when asked to

copy a drawing of a complex figure (i.e., the Rey-Osterrieth Complex Figure Test), young children usually use strategies that are inefficient, haphazard or fragmented, whereas children aged 7 to 11 years of age use strategic behaviour that is more organized and efficient (i.e., majority of children illustrate higher levels of organisation by drawing vertical and horizontal centrelines early; Anderson, Anderson, & Garth, 2001). Thus, planning and organizational skills develop rapidly in the period of 7 to 11 years of age (Anderson et al., 1996; Krikorian & Bartok, 1998), and develop gradually thereafter into adolescence (Krikorian & Bartok, 1998; Welsh et al., 1991). After the age of 12-13 years, refinement of strategies (i.e., to illustrate greater organisation) and improved decision-making continues during adolescence, as illustrated for instance by fewer errors in a Tower of London task (Anderson et al., 2001; Levin et al., 1991).

The challenge of understanding executive functioning in childhood is manifold; executive skills develop rapidly throughout childhood; progression may not necessarily be linear but occur in spurts; and components of executive functioning (EF) appear to demonstrate different developmental trajectories (Anderson et al., 2002). In addition, functional improvements in EF are likely to align with neurophysiological developments within the prefrontal cortex, which continues to develop into adulthood (e.g., Hudspeth & Pribram, 1990). Furthermore, the integrity of the entire brain, not just the prefrontal cortex, has been highlighted as necessary for efficient EF. Notably, functional improvements in EF are associated with increased maturity of anterior, posterior and subcortical brain regions, as well as the refinement of local connections within the prefrontal cortex and distal connections between the prefrontal cortex and sensory, motor, and association regions (Anderson, 2002).

Despite the rapid and complex maturation of executive functioning during childhood, many executive processes are not “fully established” until mid-adolescence or early adulthood. This is illustrated by the process of myelination of prefrontal connections that occurs gradually throughout adolescence (Klingberg, Vaidya, Gabrieli, Moseley, & Hedehus, 1999).

**Summary.** The development of a range of abilities necessary for self-regulation is ongoing in infancy and childhood. The development of self-

representations and executive functioning in childhood lays the necessary foundation for adolescent self-regulation (see Table 2.1). In order to construct goal-directed actions, first, the individuals must develop executive functioning and possess the ability to form representations of themselves and of others, processes that serve ongoing, goal-directed behaviours (Gestsdottir & Lerner, 2008). Self-representations inform the individual of past experiences, offer self-evaluations, and provide directions for future actions (Demetriou, 2000), while executive functions provides the attentional control, cognitive flexibility, and goal-setting skills necessary for goal-directed behaviours. Together, self-representations and executive functioning provide the foundations on which individuals can make choices, plan actions and regulate the execution of their actions in order to balance the demands and resources in their environment with personal goals (Bandura, 2001; Brandstädter, 2006). These relationships are illustrated below in Figure 2.5.

However, a number of additional capacities that influence goal-directed behaviours occur or are brought to the fore, for the most part, in adolescence. For example, the myelination of prefrontal connections in the brain continues in adolescence. Furthermore, the ability to regulate emotion is continuing to develop, with adolescents found to be less able to regulate emotion compared to adults (Steinberg, 2004). Thus, the ensuing section will discuss self-regulation in adolescence, followed by research on adolescent self-regulation and positive and negative behaviours.

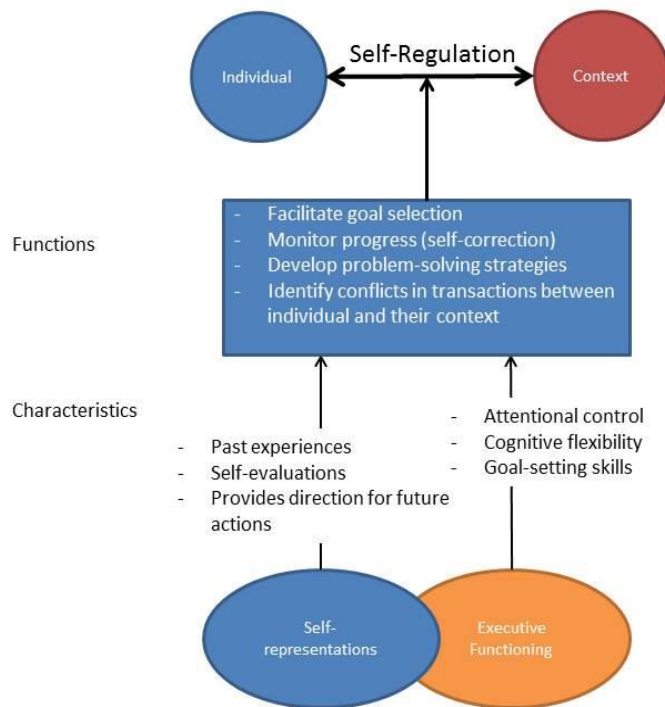


Figure 2.5

*Illustration of the relationship between self-representations, executive functioning and self-regulation.*

**2.3.3 Self-Regulation in Adolescence.** Adolescence is a period of further development of self-regulation (Steinberg, 2005). The developing processes of self-regulation occur with potentially different social contexts compared to childhood. For example, during adolescence, self-regulation may occur at a distance from adults who provide a regulatory structure and guidance during childhood. During the adolescent period a young person experiences changing opportunities (e.g., new academic, social settings), challenges (e.g., peer pressure to engage in risky behaviours), and expectations of the social context (e.g., the selection of educational paths). The social changes that occur during adolescence may provide opportunities for self-regulation to be manifested (e.g., opportunity for self-directed learning, i.e., learning to play guitar by themselves) or tested (e.g., resist temptation to drink alcohol). The focus on self-regulation during the second decade of life is also heightened as there are increased expectations that the young person is responsible for his or her development. Thus, self-regulation is a complex process that develops

simultaneously with other important changes in adolescence (e.g., brain development, increased social expectations, and educational challenges). Consequently, an understanding of self-regulation, and the context in which it develops during adolescence, is vital for understanding successful healthy development in adolescence.

A number of systems are important for developing adolescent self-regulation. This includes biological, cognitive, and contextual factors. For example, recent evidence shows that maturational brain processes continue well through adolescence, reaching adult levels at about 25 years of age (Steen, Ogg, Reddick, & Kingsley, 1997). This is contrary to earlier beliefs which stipulated that brain development activity was limited to the early adolescent period, and stimulated further by pubertal maturation (Holland, Haas, Norman, Brant-Zawadzki, & Newton, 1986). In fact, brain maturation and pubertal activity has since been shown not to be causally linked (Feinberg, Higgins, Khaw, & Campbell, 2006).

Hence, the second decade of life is a key period of change regarding brain structures and function, particularly in regions and systems associated with emotion regulation, inhibition of responses, and weighing of risk and reward (Steinberg, 2005). The changes within the developing adolescent brain are especially prevalent in the prefrontal cortex, particularly with its rapidly expanding neural linkages to the whole brain (Luna et al., 2001). This process of complex reorganisation is illustrated by continued myelination of nerve fibres, which increases rapid connectivity in communication among different brain regions. Significant and localized synaptic pruning also occurs, especially in frontal areas, that are crucial for executive functioning (e.g., Steingard et al., 2002; Sowell, Trauner, Gamst, & Jernigan, 2002). Processes of myelination and synaptic pruning both increase the efficiency of information processing (Sowell et al., 2002). These changes are believed to underscore improvements in various aspects of executive functioning, such as long-term planning, metacognition, self-evaluation and the coordination of affect and cognition (Keating, 2004).

Adolescent self-regulation is related to more than the biological and cognitive changes that occur during this life stage. Adolescent self-regulation is also a function of social and emotional processes (Keating, 2004). For example, studies of

responses to hypothetical dilemmas involving perception and risk appraisal show few reliable age differences after middle-adolescence, while studies of actual risk-taking (e.g., unprotected sex, risky-driving) illustrate that adolescents are significantly more likely to make risky decisions compared to adults (Steinberg, 2004). Therefore, it appears that adolescents often engage in risky activities *despite* knowing and understanding the risks involved (Bentlin et al., 1995; Martin et al., 2002). Furthermore, in real-life situations, adolescents do not simply rationally weigh the relative risks and consequences of their behaviour, their actions are influenced by feelings and social influences (Steinberg, 2004). Thus, adolescent risky decision-making is framed by a dual-process model of decision-making that includes a cognitive-control network and a socio-emotional system (Steinberg, 2004). Several key differences have been found in self-regulation between adolescents and adults. For example, adolescents were found to be more susceptible than adults to peer influence, more orientated to the present than the future, and are less able to regulate their emotions (Steinberg, 2004). While these differences appear between adolescents and adults, differences within adolescence in self-regulation are consistently linked to positive and negative behaviours. Below, we examine research linking adolescent self-regulation and positive and negative behaviours.

**2.3.4 Linking Self-regulation and Positive Behaviour.** Self-regulation in adolescence has been linked to a variety of negative and positive indicators of development. Self-reported low levels of self-regulation have typically been associated with higher levels of externalising (e.g., delinquent behaviour) and internalising (e.g., depression) problem behaviour in adolescence (Brody & Ge, 2001; Finkenauer, Engels, & Baumeister, 2005; Galambos & Maggs, 1991). For example, low levels of self-regulation have been found to be associated with higher rates of substance abuse (Brody & Ge, 2001), and hostility, anger and aggression (Finkenauer et al., 2005). Depressed adolescents also tend to report lower levels of self-regulation compared to non-depressed young people (Finkenauer et al., 2005). In contrast, higher levels of self-regulation have been linked to positive behaviours, such as prosocial behaviour and academic success (Moilanen, 2007). Prosocial behaviours are any voluntary positive social behaviours intended to benefit another person (Eisenberg & Fabes, 1998). Adolescents who reported greater ability in regulating participation in risky behaviour, better management of negative emotions,

and greater expression of positive emotions, self-reported as more prosocial (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). Higher levels of self-regulation have also been associated with better performance in school, and higher scores on standardised academic tests (Mischel, Shoda, & Rodriguez, 1989; Tangney, Baumeister, & Boone, 2004).

Given the consistent relationship between adolescent self-regulation and positive and negative indicators of development, self-regulation is proposed as a central component of theories of successful life management (Brandtstädter & Renner, 1990; Carstensen, Isaacowitz, & Charles, 1999; Heckhausen & Schulz, 1995). Adaptive regulations are central to a number of theories of successful life management in the life span development literature, such as the socioemotional selectivity theory (Carstensen, 1998), and the model of optimisation in primary and secondary control (Heckhausen & Schultz, 1995). While these models have been used exclusively to assess successful development in older adults, the Selection, Optimisation and Compensation model of intentional self-regulation (SOC; Baltes, 1997; Freund & Baltes, 2002) has been previously used to assess successful development in adolescents (e.g. Gestsdottir & Lerner, 2008). Thus, the following section will present an in-depth examination of the SOC model.

### **2.4 The Selection, Optimisation and Compensation Model**

Selection, optimisation and compensation are the goal-related strategies that individuals use to regulate their interaction with the context, and manage their internal (e.g., energy) and external resources (e.g., money), in order to promote successful development (Baltes, 1997; Freund & Baltes, 2002). Similar to other theoretical models of successful life management used with older adults (e.g., socioemotional selectivity theory; Brandtstädter & Renner, 1990), this model cites agency over one's own development as a key element of goal-directed behaviour (Boerner & Jopp, 2007). The SOC model is proposed as a general framework of adaptive development, representing the interactions between three general mechanisms for generating, releasing, and allocating resources (i.e., selection, optimisation, and compensation). According to the SOC model, a person's ability to negotiate between resources available to them (e.g., self-esteem), and resources available in their context (e.g., social support), is what constitutes self-regulation. A

person will assess their own abilities and evaluate the internal and external resources that are available. Based on these considerations, a person selects appropriate goals and ways to maximise the use of their resources, and minimize the effects of their deficits (Baltes, Baltes, & Baltes, 1990).

The SOC model outlines three processes in goal-directed behaviour. First, goal selection is the process of developing, refining, and committing oneself to personal goals (Freund & Baltes, 2002). Two types of goals have been identified; desired states (elective selection), or reconstructing a goal or selecting alternate goals in response to a decline in available resources (loss-based selection). First, in terms of elective selection (ES), when goals are selected (e.g., a desired state may be to achieve high marks on an academic exam), attention and behaviours are organised in action sequences. For example, extra effort may be made to attend a class about the exam, while attention may be given to the particular subject material when it is being delivered in class. This action sequence reduces the complexity of a given situation, and facilitates the taking of efficient steps towards desired goals (i.e., constructing a goal system). The constructed goal system may be based on self-representations, as they facilitate goal selection, monitoring of progress, and the development of problem-solving strategies. Second, loss-based selection (LBS) is a method of selection distinct from elective-selection (ES). Whereas ES has the focus of attaining a desired state (e.g., choosing to focus on school exams instead of sports until the exams are finished), LBS describes how an individual reacts to a decline of resources or previously available means, by reconstructing a particular goal or selecting a different goal (e.g., Freund & Baltes, 2002).

When confronted with multiple ways to reach a given goal, the second step in the goal system is to use processes of *optimization*. These processes seek strategies (e.g., persistence) or resources (e.g., time) that are compatible with personal and social values (e.g., value of academic achievement) and abilities (e.g., mathematical ability) to pursue a particular goal, with the aim of succeeding at a higher level of functioning (Baltes et al., 1990; Freund & Baltes, 2002). Optimisation involves the continuous monitoring of the discrepancy between a goal, present situation, and application of goal-relevant behaviour, to ensure the desired goal is achieved. Examples of optimization may include the investment of resources such as time and energy, where strategies such as persistence, delay of gratification, and practice help



ensure attainment of goals. For example, an adolescent may illustrate optimization by giving up a more immediate, positive experience, such as going out with friends, in exchange for a more distant, more attractive reward (e.g., studying for an exam in order to attain top marks). The persistence shown by such an adolescent may be in line with personal values of desiring academic achievement, and is subject to continuous monitoring of their academic ability and the success of studying for achieving results. The SOC model proposes that in order to achieve desired outcomes, acquiring, applying, and refining goal-relevant means is vital. Although it is acknowledged that there are usually multiple ways to reach a given goal (i.e., equifinality), a number of categories of optimising strategies are outlined (e.g., attentional focus, persistence, practice, resource allocation).

The third goal-related strategy outlined in the SOC model is *compensation*. Similar to other models of successful life management, such as the socioemotional selectivity theory (Brandstädter & Renner, 1990) and the lifespan theory of control (Heckhausen & Schultz, 1995), when a goal is selected (e.g., I want to be wealthy, therefore I'll become a highly-paid sports star), people can use selection to adjust goals when there is a loss or decline in means to achieve a goal (e.g., I want to be wealthy, I'm not good enough to be a highly-paid sports star, therefore I'll get a highly-paid research job). However, if the loss of means or functioning is not too pervasive, goals may often be maintained by using the process of *compensation*. The process of compensation is similar to optimization strategies, but in contrast to optimization, compensatory actions are aimed at *counteracting or avoiding losses* in the face of not achieving the initial goal (Freund & Baltes, 2002; Wiese, Freund, & Baltes, 2000). For example, if there is a loss in means or ability to achieve an outcome (e.g., a person got injured and was unable to play sports), the individual can seek alternative means to create an acceptable outcome (e.g., have a sports-related career), usually by acquiring new internal or external means (e.g., taking up coaching classes), or by activating unused resources (e.g., seeking the help of others).

SOC is measured by the SOC questionnaire (Freund & Baltes, 2002). The self-report approach of SOC assumes that individuals possess, have access to, and will report mental representations that reflect the use of SOC strategies. The SOC questionnaire measures four subscales of goal-directed self-regulation; Elective selection (ES), optimisation (O), compensation (C), and loss-based selection (LBS).

Elective selection (ES) represents the development of preferences or goals, the construction of a goal hierarchy, and the commitment to a set of goals (Freund & Baltes, 2002). The selection of goals is crucial, given that biological, social and psychological opportunities and constraints throughout the life span specify a broad range of alternative possible goals. ES facilitates the development, elaboration, and commitment to goals that direct development by organising behaviour over time (Freund & Baltes, 2002). The acquisition of personal goals may have further positive benefits, such as contributing to feelings of purpose and meaning in life (Klinger, 1987).

All three SOC processes are used throughout life (e.g., Selection; “I want a nice cup of coffee; Optimisation; “Starbucks sell the nicest coffee, I’ll go there”; Compensation; “Starbucks is closed but John’s café is open and sells coffee”). Nonetheless, SOC develops primarily in adolescence and adulthood (Gestsdóttir & Lerner, 2008). During adolescent development, the changes that occur at multiple levels (e.g., biological, social, contextual) contribute to, and are influenced by, the emergence of self-regulation (i.e., the development of SOC-related strategies). Therefore, the challenges and opportunities faced by youth make the study of their regulatory abilities especially important given the essential short- and long-term choices that are made during the critical adolescent period. These choices influence the establishment of long-term patterns of behaviour, including healthy and positive, or harmful and negative behaviours (Raffaelli & Crockett, 2003).

In summary, the SOC model of self-regulation has been proposed as a means of understanding successful life management (Baltes, 1997; Freund & Baltes, 2002). By describing the cognitive and behaviour (i.e., conscious) processes of goal setting and goal pursuit, the SOC model is envisaged as the mechanism of intentional self-regulation (see Figure 2.2, p.57) through which individuals contribute to the interaction between themselves and their context. However, the SOC model fails to include automatic, or social or emotional factors involved in intentional self-regulation. Before outlining this critique of the SOC model, the following section will discuss recent research on the SOC model and its role in positive youth development.

**2.4.1 SOC and Positive Youth Development.** The Selection, Optimisation, and Compensation (SOC) model (Baltes, 1997; Baltes et al., 1990; Freund & Baltes, 2002) has been used widely to understand successful self-regulation in adult and aging populations, and has also been proposed and used as a means of understanding intentional self-regulation in adolescence (Lerner, Freund, De Stefanis, & Habermas, 2001; Gestsdóttir & Lerner 2007; Gestsdóttir & Lerner, 2008).

Previous research has investigated the structure (e.g., global SOC scores versus discrete SOC factor scores) and the role of SOC processes in the positive development of adolescents (Gestsdóttir & Lerner, 2007; Lerner et al., 2011; Zimmerman, Phelps, & Lerner, 2007). This longitudinal research assessed adolescents participating in the large scale 4-H Study of Positive Youth Development (PYD; Lerner et al., 2005). First, in a group of 10-12 year olds, the structure of SOC was found to be a global factor of nine equally weighted items (2 ES items, 4 O items and 3 C items), rather than differentiated components of selection, optimisation, and compensation<sup>4</sup> (Gestsdóttir & Lerner, 2007). Subsequent work by Gestsdóttir and colleagues (2009) focused on 8<sup>th</sup>-10<sup>th</sup> Grade (13-15 years old), and found evidence within and across grades of the three-factor model of SOC. Low to moderate inter-factor correlations were observed between “Selection” and “Optimisation” and between “Selection” and “Compensation” ( $r$  range = .26 [grade 10] to .63 [grade 8]). However, the “Optimisation” and “Compensation” components were found to be highly correlated ( $r$  = .95 in grade 8, .92 in grade 9, and .73 in grade 10). Further research reported evidence for a four-factor SOC model (including loss-based selection) in a sample of 10<sup>th</sup> Grade students ( $M$  age = 15.72; Gestsdóttir, Bowers, von Eye, Napolitano, & Lerner, 2010). Inter-factor correlations were found to be low to moderate ( $r$  = .11 to .37). Thus, the decreasing inter-factor correlations and development of SOC from a global construct to a four-factor construct is consistent with Werner’s orthogenetic principle (1957), which outlines that the processes depicted within the SOC model should exist in a

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<sup>4</sup> The Loss-based selection of the SOC model was not used in this sample, as the sample aged 10-12 years were deemed too young to have representations of a decline or loss in previous levels of functioning (Gestsdóttir & Lerner, 2007).

global, undifferentiated structure in children and early adolescence, while development across the adolescent period leads to differentiation of the SOC model into its constituent parts.

The pattern of association between intentional self-regulation as measured by the SOC model and positive and negative indicators of development is consistent whether a one-, three-, or four-factor SOC model has been used. For example, the nine-item factor of SOC was used to predict, within and across time, scores related to indicators of PYD, depression, delinquency, and risk behaviours (e.g., smoking; Gestsdóttir & Lerner, 2007). Both within and across grades (5<sup>th</sup> and 6<sup>th</sup> grade; 10-12 years), the global SOC factor scores were positively related to all the indicators of PYD ( $r$  ranging from .14 to .39), and negatively related to all indicators of negative behaviours ( $r$  ranging from .12 to .30). Moreover, building on these findings and using the same data set, Zimmerman and colleagues (2007) also found that the nine-item global SOC scores from 5<sup>th</sup> Grade (approximately 10 years old) were predictive of 7<sup>th</sup> grade (approximately 12 years old) PYD and negative behaviours, with no gender differences observed in these effects. In addition, Zimmerman and colleagues (2008) used the 4-H study of 5<sup>th</sup>-8<sup>th</sup> graders (10-13 year olds) to look at patterns of change (i.e., trajectories) of positive and negative behaviours, and found young people higher in SOC scores (9-item scale) were more likely to score highest in PYD and contribution trajectories, and lowest in depressive symptoms and problem behaviour trajectories.

In a study assessing the three-factor SOC structure in 8<sup>th</sup>-10<sup>th</sup> Grade ( $M$  age = 14.42 years), the subscale scores of selection, optimisation, and compensation, in addition to a composite 9-item SOC total score and a composite 18-item total SOC score, were used in separate linear regressions as predictors of positive and negative outcomes (Gestsdóttir & Lerner, 2009). The results showed that subscales of optimisation and compensation, but not selection, consistently predicted PYD, while optimisation predicted all negative outcomes (i.e., depression, delinquency and drug abuse) 12-months later, while compensation scores in 9<sup>th</sup> grade predicted depression scores in 10<sup>th</sup> grade. Both the composite 9-item SOC scores and 18-item SOC scores in Grade 8 and Grade 9 significantly predicted PYD scores and negative outcomes 12-months later (Gestsdóttir & Lerner, 2009). Similarly, using the four-factor SOC model (i.e., including loss-based selection), correlations between SOC factors were

generally positively related to adolescent positive functioning (i.e., PYD and contribution; Gestsdóttir et al., 2010). However, the strength of the observed correlations between the four SOC subscales and PYD varied from low to moderate (.05 [selection] to .43 [optimisation]). Across the SOC studies, a stronger association was found between self-regulation and positive indicators of development, compared to negative indicators of development (Gestsdóttir & Lerner 2007; Gestsdóttir & Lerner 2009; Gestsdóttir et al., 2010). This is consistent with the idea that SOC skills are involved in successful life management.

## 2.5 Criticisms of the SOC model

While the research outlined in Section 2.4.1 has generally found evidence to support the role of self-regulation in positive youth development, several concerns remain. These concerns are highlighted in four primary areas: 1) The relationship between SOC and positive and negative outcomes are weak; 2) critiques of the SOC framework advocate for further research on goal selection; 3) previous research has indicated the potential explanatory power of including other variables related to self-regulation; and 4) social and emotional factors included in the definitions of self-regulation are omitted from the SOC model.

**2.5.1 Weak relationships between SOC and positive and negative outcomes.** First, in the studies examining the relationship between SOC and positive youth development (PYD), while the relationships were significant, the amount of variance explained was low. For instance, across 8<sup>th</sup>-10<sup>th</sup> grade, variance explained ranged from 7-11% (SOC in Grade 8, predicting PYD in Grade 9) to 11-16% (SOC in Grade 9, predicting PYD in Grade 10). Also, looking at the individual factors of SOC, the optimisation factor consistently predicted PYD scores across grades, while compensation scores in both 8<sup>th</sup> and 9<sup>th</sup> grade predicted PYD scores in 10<sup>th</sup> grade (Gestsdóttir & Lerner, 2009). In contrast, the selection subscale did not predict PYD. Looking at negative outcomes (i.e., drug abuse, delinquency and depression), selection and compensation subscales did not predict negative outcomes, while optimisation scores consistently predicted drug abuse, and to a lesser extent delinquency and depression scores across 8<sup>th</sup>-10<sup>th</sup> Grade (Gestsdóttir & Lerner, 2009). Similarly, using the four-factor SOC model (i.e., including loss-based selection; Gestsdóttir et al., 2010), correlation coefficients were weakly related to

adolescent positive and negative functioning, with the strongest association between optimisation and positive functioning ( $r$  range from .24[*caring*] to .43 [Total PYD]). Thus, while overall and subscale SOC scores are generally significantly related to indices of development in anticipated directions (i.e., positively associated with PYD), the relationships are weak, and the variance explained is low. Therefore, given that the SOC model has illustrated reliability and construct validity in adolescent populations (Napolitano, Kristina, & Muellera, 2013), factors other than goal-directed behaviours may predict PYD.

**2.5.2 Further research needed on goal selection.** Second, critiques of the SOC framework have proposed that the SOC model would benefit from future research on motivational and volitional aspects of developmental regulation. This future research is needed to identify specific aspects of goal selection and goal pursuit behaviours that foster adaptive development (Riediger, Li, & Lindenberger, 2006). A number of authors have argued that not all expressions of SOC are equally adaptive (Freund & Baltes, 2002; Freund, Li, & Baltes, 1999). For example, selecting too few goals or unrealistic goals, may impair one's flexibility, a characteristic necessary for continued growth and development (Heckhausen, 1999). In addition, selecting goals such as earning money selling drugs, may facilitate an adolescent's education in business or opiate manufacture, but is unlikely to be deemed adaptive by larger society. Thus, in order to separate adaptive from less adaptive forms of SOC, person and context characteristics need to be taken into account (Riediger, Freund, & Baltes, 2005). For example, the values that an individual holds (e.g., prosocial values) are likely to shape the selection of goals and subsequent behaviour (Miller & Byrne, 2001). For instance, an individual's values can direct selective attention, focusing attention on what is relevant to a particular goal. From an applied perspective, such knowledge would provide an empirical foundation for intervention programmes aimed at fostering successful development.

**2.5.3 Other variables related to SOC that promote PYD.** Third, recent work on the 4-H database has illustrated that additional individual attributes other than SOC may be necessary to promote positive development across adolescence (Schmid et al., 2011a). For example, Schmid and colleagues (2011a) investigated the role of hopeful futures and self-regulation (i.e., SOC scores) on PYD in grade 7 – 9 ( $M$  age range 13.05 – 14.94 years; Schmid, Phelps, Kiely, et al., 2011). Hopeful

future expectations (e.g., expectation of having a good job in the future) were proposed to motivate adolescents to apply specific behavioural and cognitive skills, such as goal-directed self-regulation skills (e.g., persistence in studying), toward achieving positive developmental outcomes (e.g., passing an exam). Thus, hopeful future expectations and SOC may be considered as distinct but related instantiations of adaptive developmental regulations. Results illustrated that higher hopeful future expectations in grade 7 predicted higher SOC scores in grade 8, while higher SOC and hopeful future expectation scores in grade 8 predicted PYD one-year later (Schmid et al., 2011a). Thus, hopeful future expectations influenced PYD both directly and indirectly via SOC.

In a further study by Schmid and colleagues (2011b), trajectories of development were also assessed across 7<sup>th</sup> – 9<sup>th</sup> grade. Trajectories representing the highest PYD scores were designated the optimal trajectories for young people. The computed odds ratio (i.e., effect size for logistic regression) indicated that the effect of hopeful future expectations was greater than the effect of SOC (18-item measure) in predicting membership of the optimal trajectories of PYD (SOC = 1.37, vs. Hopeful future = 1.73) and contribution (SOC = 1.13, vs. Hopeful future = 1.64). Overall, controlling for gender and mother's education, SOC ( $\beta = 0.32$ ) and hopeful future ( $\beta = 0.55$ ) explained 25% of the variance predicting membership in the optimal trajectories of PYD (Schmid et al., 2011b). Thus, individual attributes such as hopeful future expectations, can make a meaningful contribution to adaptive developmental regulations (i.e., PYD). Given this result, other individual attributes that may promote adaptive developmental regulations, and subsequent healthy adolescent development, should be examined.

**2.5.4 Social and emotional factors included in the definitions of self-regulation are omitted from the SOC model.** Related to the previous point of additional factors promoting adaptive developmental regulations, the definitions of self-regulation, as previously outlined in Section 2.3.1 (p. 55), consistently highlight the role of regulating behaviour, attention, emotions, and cognitive strategies within a social environment (e.g., Moilanen, 2007). However, the role of emotion regulation, the process through which individuals manage their emotional experience, behaviour, expression or emotion-eliciting situation (Eisenberg et al., 2000), is completely absent from the SOC model (Freund & Baltes, 2002). As

detailed below, emotion regulation plays a key role in goal-directed behaviours and positive development (e.g., Brandstädter, 2006). In addition, the SOC items assessing selection (elective selection and loss-based selection), optimisation and compensation do not include social and attitudinal factors, but focus only on cognitive (e.g., reframing) and behavioural factors (e.g., making lists). For example, high scores on elective selection means an endorsement of behaviours such as developing clear goals, selecting a limited number of goals on which to focus one's resources, and prioritising goals in a goal hierarchy according to importance of goals (Freund & Baltes, 2002). A high score on optimisation implies a person endorses a large number of behaviours describing the acquisition and investment of means into one's goals and persistence in goal pursuit when encountering obstacles (Freund & Baltes, 2002). However, developing clear goals (e.g., being a good friend), and prioritising goals according to importance (e.g., doing what my friend wants instead of what my parents want) may not foster positive development. For instance, an adolescents' values or beliefs, in particular the values attached to potential behavioural choices (e.g., to study for an exam or go outside and play with friends), can have an important role in selecting the goals of self-regulatory behaviour (Miler & Byrnes, 2001), and therefore impact PYD. In the same example of choosing a desired state (e.g., going out to play with friends) versus a less desired (or undesired) state (e.g., studying for an exam), an individual's ability to resist the pressure of their peers (i.e., to make an autonomous decision), to orientate themselves towards future desired states (i.e., getting a good exam result), or to modulate the emotional response to desired or undesired goals (e.g., to lower the intensity of the positive/negative emotions linked to the desired/undesired goal), can influence goal-directed behaviours and positive youth development. Therefore, prosocial values, peer influence, emotion regulation, and future orientation are proposed as key features of adolescent self-regulation that may influence goal-directed behaviours (as measured by the SOC model) and impact PYD. Below, we outline the relationships between each of the predictor variables (i.e., prosocial values, peer influence, emotion regulation, and future orientation) and goal-directed behaviour and positive development. The proposed pathways between the predictor variables, goal-directed behaviour, and PYD, are subsequently outlined in detail in Section 2.6.1.



**Values, self-regulation, and PYD.** As illustrated above, the values that an adolescent holds can play a role in self-regulation. Values are abstract ideas that guide behaviour as well as the evaluation of people and events and vary in terms of importance across individuals (Schwartz, 1992). Values can influence self-regulation in two distinct ways. First, values may consciously influence self-regulation as a decision-maker's attitudes and beliefs about options (e.g., how effective options would be, how much effort they would take etc.), determine two things; which options are entertained in a particular instance, and the rankings assigned to options (Byrnes, Miller, & Reynolds, 1999). Options which are valued higher are more likely to be chosen, and subsequently subjected to goal-directed behaviour (e.g., planning). Thus, valuing prosocial behaviour may provide motivational impetus to apply specific behavioural and cognitive skills, such as goal-directed self-regulation skills (e.g., persistence, planning), toward achieving a desired prosocial outcome (e.g., helping a neighbour). This is similar to expectancy-value models of behaviour (e.g., Wigfield & Eccles, 2001), which highlight the role of expectancies and values as predictors of persistence of behaviour. If positive youth development is established as the desired goal, prosocial behaviours may be viewed as an important manifestation of mutually beneficial adaptive regulations (i.e., adaptive individual-context interactions). For instance, if an individual holds prosocial values (e.g., values helping people), and is given the opportunity to act on those values in their context (e.g., a volunteering programme at school), this situation can be seen to benefit both the individual and the context. Therefore, the values associated with prosocial behaviours are important because they can guide adolescent's self-directed behaviour (Gerrits, de Ridder, de Wit, & Kuijer, 2009). However, no research has examined the impact of prosocial values, goal-directed behaviours (i.e., SOC) and positive youth development. Thus, the current research aims to assess the relationships between prosocial values, SOC, and positive youth development.

Second, in line with dual-process models of decision-making (e.g., Gibbons & Gerrard, 1995; Steinberg, 2004) values may influence behaviour automatically, as the emotional response related to values (e.g., happiness linked to a desired goal) may be chosen without using a conscious decision-making process (e.g., Gibbons & Gerrard, 1995). Thus values associated with desired (or undesired) goals can

influence behaviour in two distinct ways (i.e., by motivating goal-directed behaviours, and/or by eliciting an automatic heuristic response). Although no previous research has clarified the differentiation between values influencing automatic or conscious goal-directed behaviour, it is clear that values associated with desired goals are essential for promoting positive outcomes (Allen, Weissberg, & Hawkins, 1989). In order to promote positive outcomes such as prosocial behaviour in young people, these outcomes must be valued by young people.

The role of values in influencing behaviour indirectly through automatic or heuristic processes has been conceptualised by assessing social-images. Social-image studies focus on the images that individuals have of certain behaviours, and of the type of person who engages in the behaviour (e.g., a typical smoker; Gibbons & Eggleston, 1996). People can attribute characteristics (i.e., values) to mental images (e.g., “cool”, “fashionable”, “slow”) of the type of person who engages in different behaviours (e.g., skateboarding), even if they have not tried the behaviours themselves (Amos, Gray, Currie, & Elton, 1997). Although the values associated with behaviours may influence goal-directed behaviour such as planning (Byrnes et al., 1999), in this instance, social-images, or *prototypes*, are proposed as central to the automatic, non-conscious processes of decision-making (Gibbons & Gerrard, 1995).

A prototype is an individual’s image of the typical person who belongs to a group or engages in certain behaviour (Ouellette, Hessling, Gibbons, Reis-Bergan, & Gerrard, 2005). Therefore, a prototype is a perceived social image of a particular behaviour (e.g., volunteering) that encapsulates the perceived values and characteristics associated with the behaviour (e.g., social, confident). According to the prototype/willingness model, two aspects of prototype perception predict engagement in behaviour: the degree of liking one has for the prototype image (prototype evaluation), and similarity of the prototype image to oneself (prototype similarity; Ravis, Sheeran, & Armitage, 2006). In particular, the more positive people’s evaluations of the prototype and the greater their perceived similarity to the prototype, the greater will be their inclination to engage in the behaviour described in the prototype (Ravis et al., 2006). Prototype perceptions influence behaviour through their impact upon behavioural willingness, which is defined as the “recognition that one would be willing to engage in the behaviour under some circumstances”

(Gibbons & Gerrard, 1995, p. 79). For example, a typical smoker may be considered “cool”, while a typical non-smoker may be “boring” (Rivis et al., 2006). Similarly, negative prototypes of a behaviour, for example, the perception of smoking as “childish”, is anticipated to inhibit engagement in the behaviour. How favourable or unfavourable an image is perceived to be, is likely to be a key determinant of engagement in a behaviour, thereby shaping the role of prototype images in facilitating or inhibiting behaviour (Rivis et al., 2006).

Previous research on health-risk images suggest that the more positive people’s evaluations of the prototype (i.e., favourability) and the greater their perceived similarity to the prototype image, the greater their inclination (i.e., motivation) to engage in the behaviour described (Rivis & Sheeran, 2003; Rivis et al., 2006). For instance, a negative prototype factor, consisting of negative characteristics (i.e., dull, childish, confused and selfish) was significantly associated with non-smoking status across 14-21 year olds (*M* age = 16.2 years; Piko, Bak, & Gibbons, 2007). Furthermore, a positive prototype factor, consisting of positive characteristics (i.e., smart, good-looking, considerate, independent, and self-confident) was associated with smoking status, but only for boys (Piko et al., 2007). Thus, prototypes are found to both inhibit and facilitate adolescent behaviour.

However, there is a dearth of research investigating the role of positive images in promoting positive outcomes such as prosocial behaviour. Previous research has found that young people hold mixed views of the kinds of people who carry out prosocial behaviour, for example, people who volunteer have been identified as “self-righteous”, stereotypically “middle-aged housewife with nothing better to do”, “caring”, and “altruistic” (Foster & Fernandes, 1996; Gaskin, 1998). Hence, the perceived values held by adolescents of prosocial behaviours (e.g., volunteering) may have a significant impact on engagement in behaviours. However, no research has examined whether youth perceptions of prosocial behaviour influences positive development. Therefore, a key task of the current research is to assess youth perceptions of prosocial behaviour (i.e., values associated with prosocial behaviour), and subsequently examine the relationship between prosocial prototypes and positive youth development.

***Peer influence, self-regulation and PYD.*** Peer influence has been highlighted as a key feature of adolescence and influential in directing adolescent behaviour (e.g., Brown, 2004; Mounts & Steinberg, 1995; Steinberg & Monahan, 2007). Self-regulation, like any other individual characteristic, functions within a social context that is defined by parents, peers, and the larger society (Brandstädter, 2006). A particular hallmark of adolescent psychosocial functioning is the heightened importance of peer influence (Brown, 2004). As a child approaches adolescence, time is increasingly spent in interactions with peers (Brown, 1990). These interactions provide essential social support and companionship and help shape and direct the child's behaviour (Ellis & Zarbatany, 2007). Common conceptions suggest that the majority of adolescents are particularly susceptible to peer influence (Sumter, Bokhorst, Steinberg, & Westenberg, 2009). However, research on susceptibility to peer influence has illustrated mixed findings in relation to differences across age and gender (Sumter et al., 2009). This may be due in part to differences in the way peer influence has been conceptualised and assessed (Berndt, 1979; Ellis & Zarbatany, 2007; Steinberg & Monahan, 2007; Sumter et al., 2009). Nevertheless, peer influence, or the ability to resist the influence of peers (i.e., autonomy), is seen as a central aspect of adolescent self-regulation, and therefore important for positive development.

Affiliation with peers and self-regulatory ability have been highlighted in the emergence and development of antisocial behaviour in children and adolescents (Dishion & Patterson, 2006; Dodge, Dishion, & Lansford, 2006). While affiliation with 'deviant' peers has been found to increase antisocial behaviour, many youth who are equally exposed to repeated contact and friendships with 'deviant' peers are not negatively influenced (Gardner, Dishion, & Connell, 2008). One major theory on the development of criminality proposes that those who engage in problem behaviours lack 'self-control' (Gottfredson & Hirschi, 1990; Hirschi, 2004). Thus, self-regulation in the presence of deviant peers is deemed to serve as a main effect on the development of antisocial behaviour, and also as a moderator of antisocial behaviour (Dishion & Patterson, 2006). For example, children and adolescents low in self-regulation are hypothesised to be more vulnerable to pathogenic relationship dynamics in general, and peer influence in particular, while on the other hand, young people high in self-regulation are proposed to be more able to resist temptations of

peers, and keep track of long-term goals despite opportunities for short-term social rewards often provided by the adolescent peer network (Gardner et al., 2008).

Although the majority of research on peer influence has assessed the relationship between peer influence and risky behaviours, it is also important to note that researchers have also pointed out the potential role of peer influence in prosocial behaviour. For instance, given that adolescents' peer groups vary in their norms and values (i.e., could hold positive or negative values), some young people may find themselves under pressure to behave in socially desirable ways (e.g., pressure to do well in school, avoid drugs, not engage in sexual activity; Brown, 2004; Ellis & Zarbatany, 2007; Mounts & Steinberg, 1995; Steinberg & Monahan, 2007). However, while the role of intentional self-regulation and peer influence on antisocial behaviour has been firmly established (Gardner et al., 2008), relatively little research has examined the role of peer influence and self-regulation in influencing prosocial behaviour.

Researchers suggest that increasing resistance to peer influence may be linked to increasing psychosocial maturity (Steinberg & Monahan, 2007; Sumter et al., 2009). The increase of impulse control, responsibility and self-awareness during adolescence (Greenberger & Sørensen, 1974; Weinberger, 1997) is likely to lessen the tendency to follow others without thinking. Recent studies support this stance, as a linear decreasing susceptibility to peer influence has been found using experimental (Walker & Andrade, 1996) and self-report measures (Steinberg & Monahan, 2007; Sumter et al., 2009). This suggests that over time, adolescents gain more autonomy from their peers and are able to adhere to their own position. This is similar to the stereotype of a self-regulated learner as autonomous and purposeful (Newman, 2000). Such self-determination is in line with conceptions of the Five Cs of PYD (e.g., character; Lerner, 2004), and is a core feature of the aims of PYD programmes (Catalano et al., 2002). Thus, the degree to which adolescents act autonomously in their interactions with their peers (in antisocial, neutral or prosocial contexts), is likely to indicate psychosocial maturity, lead to an increase in achieving one's own self-determined goals, and predict PYD. Although resistance to peer influence and self-determination is in line with conceptions of PYD, no previous research has tested this relationship. The proposed pathways in the current research

between resistance to peer influence, goal-directed behaviour, and PYD, are outlined in detail in Section 2.6.1.

***Emotion regulation, self-regulation and PYD.*** The definitions of self-regulation outlined in Section 2.3.1 (p. 55) consistently highlight the role of regulating emotions, in addition to behaviour, attention, and cognitive strategies within a social environment (e.g., Moilanen, 2007). However, a key omission from the SOC model of goal-directed behaviour is emotion regulation. Emotion regulation refers to the internal and transactional process through which individuals consciously or unconsciously modulates one or more components of emotion by modifying either their own experience/behaviour/expression, or the emotion eliciting situation (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Gross, 1999). These components of emotion include subjective feeling states (e.g., sadness), cognition and information processing, expressive displays and behaviour, motivation, and physiological processes (Diamond & Aspinwall, 2003). Emotion regulation (ER) processes include skills and strategies for monitoring, evaluating, and modifying emotional reactions (Gullone, Hughes, King, & Tonge, 2010). ER processes can target positive as well as negative emotions, and can create changes in both the intensity and the temporal qualities of emotional responding (e.g., changing the speed of onset or recovery, persistence, range, or lability of emotional responding). For example, adolescents studying at the weekend for an exam may feel sad and upset about missing out a social event (e.g., a party), but may reappraise the situation as beneficial for their long term goals (i.e., getting to University). Thus, emotion regulation is a central aspect of self-regulation.

From a developmental systems perspective, emotion regulation is an intrinsic part of the individual-context relations (Brandstädter, 2006). For example, emotion can be managed through the extrinsic influence of other people (e.g., parents, peers), an individual's own efforts, and also by the individual's goals in the specific emotion-eliciting context (Thompson & Goodman, 2010). Thus similar to intentional self-regulation, the context, the abilities of the individual, and the goals in specific contexts, are important for guiding emotion regulation and subsequent behaviour.

Emotion regulation is also illustrated in the process of self-evaluation. During the process of self-evaluation, which influences goal-directed behaviour by comparing the current state with desired goals, an individual may activate a broad spectrum of positive or aversive emotions (e.g., pride, anger, hope, confidence, fear, worry; Brandstädter, 2006). Emotions are linked to, and mediate between, cognitions and action tendencies (e.g., Averill, 1980). Within contexts of intentional self-development, emotions signalling a mismatch between intended and actual development outcomes are of particular interest because of their inherent potential to enhance corrective action (Brandstädter, 2006). In particular, self-referential emotions such as guilt, worry and anger are important in self-regulation. For example, feelings of anger indicate an obstruction of personal goals; typically they involve an inclination toward destroying the frustrating obstacles, and are especially strong when positive contrasts are readily accessible (Miller, Turnbull, & McFarland, 1990). In addition to self-referential emotions, other-orientated emotions, for example, empathy, awe or disdain, may be evoked by observing the behaviour of other people, which can affect intentional self-development through making salient facets of identity and morality (e.g., Taylor, 1989). Therefore, regulating emotions, activated by interpersonal (e.g., happiness influenced by a peer) or intrapersonal processes (e.g., disappointment due to self-evaluations), are central to goal-directed behaviour (i.e., intentional self-regulation).

Emotion regulation is particularly important during the second decade of life as the frequency of youth's positive mood states appear to deteriorate over the course of adolescence, and adolescents experience more frequent and intense emotions than younger or older individuals (Larson & Lampman-Petratis, 1989). Furthermore, the transition through adolescence is accompanied by physical, psychological, and social transformations that elicit novel experiences of emotional arousal. In addition, many of the hormonal, neural and cognitive systems thought to underlie the regulation of emotion appear to mature throughout the adolescent period (Spear, 2000).

Emotional regulation has been linked to a number of aspects of functioning. For example, individuals who lack the ability to successfully regulate emotions misidentify and misdirect their emotional experience, thus hindering their ability to function adaptively and appropriately (Kostiuk & Fouts, 2002). Furthermore, dysfunctional emotional regulation has been implicated in over half of the DSM-IV

Axis I disorders, and in all of the Axis II disorders (Gross, 1998). Poor ER skills lead to less adaptive coping in stressful situations, therefore is a crucial ingredient for successful development (Eisenberg, Hofer, & Vaughan, 2007).

Relatively few studies have examined the relations between ER and positive and negative functioning in adolescence (Phillips & Power, 2007). In the limited research that has been conducted, ER has been associated with positive and negative behaviours such as prosocial behaviour, problem behaviour and depressive symptoms (Benson et al., 2006; Silk, Steinberg, & Morris, 2003). For example, Silke and colleagues (2003) measured adolescents' strategies for regulating negative emotions over a one-week period. Adolescents who reported more intense and labile emotions, and used disengagement (e.g., denial) or involuntary engagement (e.g., rumination) strategies, were found to display higher depressive symptoms and more frequent problem behaviour (e.g., lying, arguing, stealing). On the other hand, in an intervention aimed at promoting adaptive ER (e.g., reframing), the experimental group who received psycho-education on ER and used expressive writing to trigger positive cognitive affect, were found to show a decrease in negative affect and absenteeism from school, and an increase in school grades, compared to the wait-listed control group (Horn, Pössel, & Hautzinger, 2011). Thus, ER is an important aspect of adolescent self-regulation and can be categorised as adaptive or maladaptive.

In terms of categorisation, functionalist accounts of emotion regulation differentiate between functional and dysfunctional roles of emotions (Power & Dalgleish, 1997). For example, anxiety can indicate a threat to an individual's desired goals, thereby providing useful information and facilitating goal-directed behaviours (Power & Dalgleish, 1997). This is considered a functional role of emotion regulation. On the other hand, dysfunctional emotion regulation may involve rejecting or blocking emotions, leading to an amplification of distress (Phillips & Power, 2007). Furthermore, an important distinction of emotion regulations is based on attribution theories (e.g., Weiner, 1986), where emotion regulation strategies can be categorised as using internal resources (e.g., cognitive reframing) or external resources (e.g., distraction). Emotion regulations categorised as internal (or external), can be further categorised as functional (e.g., reviewing goals) or dysfunctional (e.g., ruminating). Adaptive emotion regulation strategies



(i.e., internal- and external-functional) have been found to be positively related to quality of life, while maladaptive emotion regulation strategies (i.e., internal- and external-dysfunctional) were positively related to behavioural problems (Phillips & Power, 2007). However, the literature to date is limited. More research on adolescent emotion regulation is clearly needed. Thus, the current study will assess the relationship between adaptive and maladaptive ER, goal-directed behaviours, and positive and negative indices of development. The proposed pathways between emotion regulation, goal-directed behaviour, and PYD, are outlined in detail in Section 2.6.1.

***Future orientation, self-regulation and PYD.*** Intentional self-regulation involves actions that have been selected from alternative actions, and that aim to transform situations in accordance with desired future states (Brandstädter, 2006). However, while desired future states are central to intentional self-regulation, popular stereotypes of young adolescents depict an image of individuals who are notoriously short-sighted, orientated to the immediate rather than the future, unwilling or unable to plan ahead, and less capable than adults at envisioning the long term consequences of their decisions and actions (Steinberg et al., 2009). Thus, future orientation has been proposed as a key feature of positive development in youth (Steinberg & Cauffman, 1996).

Future orientation is the term used by developmental psychologists to refer to the collection of loosely related affective, attitudinal, cognitive, and motivational constructs that conceptualise youthful short-sightedness (Steinberg et al., 2009). This includes the ability to imagine one's future life circumstances (Nurmi, 1991), the length of time one is able to project one's imagined life into the future (i.e., "temporal extension"; Lessing, 1972), the extent to which one believes he or she has control over his or her future (McCabe & Barnett, 2000), the extent to which one thinks about or considers the future ("time perspective"; Cauffman & Steinberg, 2000), the extent to which one believes there is a link between one's current decisions and one's future well-being (Somers & Gizzi, 2001), the extent to which one is optimistic or pessimistic about the future (Trommsdorff & Lamm, 1980), and the extent to which one engages in goal setting or planning (Nurmi, 1991). These varied, but potentially interrelated, definitions indicate that future orientation consists of components that are cognitive (e.g., extent to which one thinks about the

future), attitudinal (e.g., the extent to which one prefers long-term, as opposed to short-term goals), and motivational (e.g., the extent to which one formulates plans to achieve long-term goals).

Future orientation has been identified as an important influence on negative development indices (e.g., Cauffman, Steinberg, & Piquero, 2005; Somers & Gizzi, 2001). For example, previous research found a weaker orientation to the future was a characteristic feature of delinquent youth and youth who engage in relatively more risky activity compared to their peers (Cauffman et al., 2005; Somers & Gizzi, 2001). Additionally, in a study of adolescents on probation ( $M$  age = 15.3 years), higher scores of future orientation, as measured by positive attitudes towards the future (e.g., “what happens to me in the future mostly depends on me”), was significantly related to lower likelihood of self-reported alcohol problems, marijuana and hard drug use (e.g., cocaine), and greater perceived risk associated with reckless behaviour (e.g., driving while drunk; Robbins & Bryan, 2004).

Overall, little research has explicitly examined the role of future orientation in positive adolescent development. Previous research has shown that a strong attentiveness to future considerations is associated with better decision-making (Grisso et al., 2003). In addition, a related concept, hopeful future expectations, has been found to be associated with PYD, with higher scores related to perceived hopeful future predicting higher PYD scores (Schmid, et al., 2011a; Schmid et al., 2011b). However, hopeful futures and future orientation are related, but separate concepts. In addition to tapping into the motivational aspect of the hopeful future expectation construct, the future orientation construct is a broader measure of orientation towards the future that includes cognitive, attitudinal, and motivational components. For example, the future orientation construct explicitly assesses the extent to which one engages in goal setting (e.g., making lists), while hopeful future expectations does not. Hence, similar to hopeful future expectations, future orientation may also motivate adolescents to apply specific behavioural and cognitive skills, such as goal-directed self-regulation skills (e.g., persistence in studying), toward achieving positive developmental outcomes (e.g., passing an exam). Therefore, future orientation may be considered as another instantiation of adaptive developmental regulations.

Thus, in the current research, future orientation is considered central to adolescent self-regulation and positive development. Although some research has found that a higher orientation towards future considerations were related to lower negative outcomes and higher positive outcomes, and desired future states were related to goal-directed behaviour, research is limited. The current study aims to add to the previous work by Schmid and colleagues (2011a, 2011b) by assessing the relationship between future orientation, SOC, and positive and negative outcomes simultaneously. Thus the current research aims to add to the literature on the role of future orientation in positive and negative development in adolescence.

### **2.6 Proposing a Model of Adolescent Self-Regulation**

From the literature outlined above, adolescent intentional self-regulation, and subsequent PYD, may be viewed as contingent on more than the conscious, cognitive and behavioural goal-directed actions that are operationalised in the SOC model. Adolescent behaviour can be viewed as subject to two different systems of decision-making; a conscious, reasoned, cognitive system, and a non-conscious, reactive, socio-emotional system (e.g., Steinberg, 2008). As previously outlined, *intentional* self-regulation refers to goal-directed behaviours that are aimed at harmonising demands and resources in the environment in line with personal goals (Gestsdóttir & Lerner, 2008). When the desired outcome, conceptualised as the relationship between an individual and their context, is mutually beneficial, adaptive regulations (i.e., positive development) occur. In order to gain an understanding of adolescent self-regulation and positive development, it is necessary to examine the factors that influence the individual's negotiations of the demands and resources in the environment with personal goals. Thus, the current study examines the role of prosocial values, resistance to peer-influence, emotion regulation, future orientation and SOC as relational factors that influence the relationship between the individual and their context (see Figure 2.6).

In addition, intentional self-regulation consists of both conscious and automatic goal-directed behaviour (Gestsdóttir & Lerner, 2008). That is, goal-directed behaviours that are aimed at adjusting the demands and resources available in the environment in line with personal goals may be influenced by a conscious, reasoned, cognitive system, and a non-conscious, reactive, socio-emotional system.

Consequently, prosocial values, peer-influence, emotion regulation, and future orientation may impact PYD in two ways; indirectly by influencing conscious goal-directed cognitions and behaviour (i.e., on SOC) that in turn leads to PYD, or by directly impacting PYD subscales (i.e., caring, character, competence, confidence and connection) through more automatic, reactive, behavioural system (see Figure 2.6). These hypothesised pathways are outlined below.

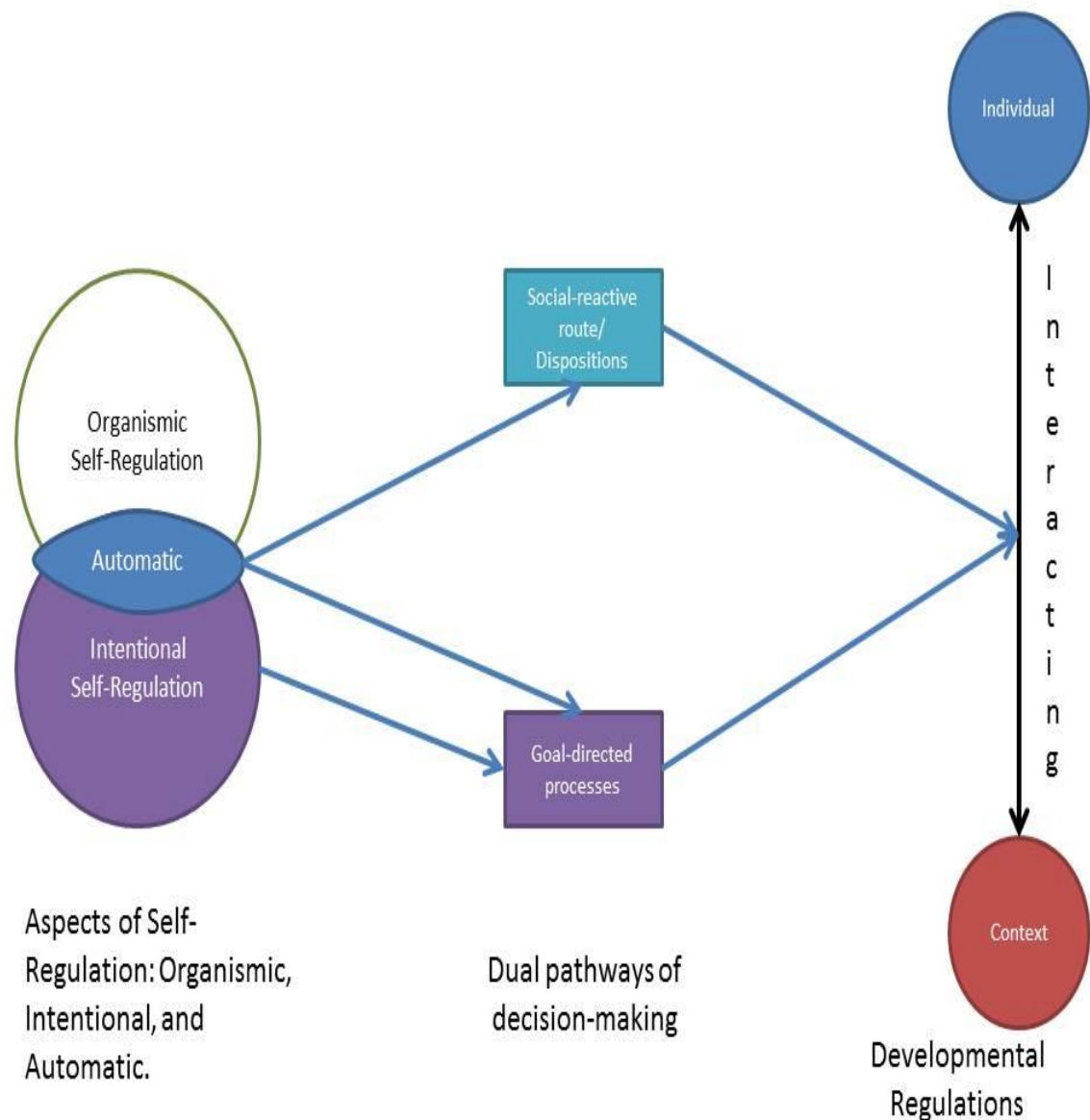


Figure 2.6

*Social-reactive and goal-directed pathways to developmental regulations*

**2.6.1 Pathways to PYD.** When an adolescent's actions on developmental regulations (i.e., interactions between individual and context) are adaptive, the person is in fact acting successfully to align their interests, values, desires, or needs with contextual resources (e.g., Baltes, Lindenberger, & Staudinger, 2006). These adaptive regulations over time are hypothesised to lead to positive developmental outcomes (i.e., PYD; Lerner, et al., 2005). As previously highlighted, prosocial values, resistance to peer-influence, emotion regulation, and future orientation may impact PYD in two ways; indirectly by influencing conscious goal-directed behaviour (i.e., SOC), or by directly impacting PYD. The direct and indirect relationships are outlined below, followed by a hypothesised structural equation model.

***Direct predictors of PYD.*** In addition to the cognitive and behavioural skills represented by the SOC model (Freund & Baltes, 2002), research supports the role of further factors in the process of realising adaptive developmental outcomes.

First, prosocial values may directly influence developmental regulations as an individual aims to align their values with contextual resources. For example, previous research on adolescent's extracurricular activities has highlighted the role of identity in influencing engagement in activities (Eccles & Barber, 1999; Haggard & Williams, 1992; Kivel, 1998). Adolescents are more likely to select activities that uphold valued aspects of their personalities and allow them to associate with others who they believe are similar (Eccles & Barber, 1999; Haggard & Williams, 1992). This is in line with the social-reactive pathway of decision-making (Gibbons & Gerrard, 1995), which stipulates that positive perceived characteristics and attributes of a person who engages in a behaviour increases motivation to participate in the behaviour, while negative characteristics and attributes of a person who engages in a behaviour serves to inhibit participation (Rivis et al., 2006). Thus, adolescents' perceptions of their "possible selves" serve to organise and energise behaviour in line with desired behaviours (Yowell, 2000; Oyserman, Bybee, & Terry, 2006). For example, if an adolescent perceives the behaviour of volunteering as positive, and internalises this behaviour as part of their self-concept, they are more likely to be motivated to engage in the behaviour. This motivational process is likely to proceed through the non-conscious, reactive decision-making pathway, as the affective evaluation of prosocial behaviour is likely to occur automatically (Zajonc, 1980).

Thus, perceived prosocial values are hypothesised to influence the interacting individual-context relations directly, thereby influencing PYD. This effect is hypothesised to occur over and above the mediated effect of prosocial values on intentional self-regulation (i.e., SOC) described below.

Second, resistance to peer influence may also directly influence PYD. Operationalised as perceived autonomy from peers, increased resistance to peer influence is suggested as an indicator of psychosocial maturity (e.g., Flink, Boggiano, & Barrett, 1990; Steinberg & Monahan, 2007; Sumter et al., 2009). Based on self-determination theory (Ryan & Deci, 2000; Ryan, Kuhl, & Deci, 1997), autonomy is linked to the underlying motives for the initiation of behaviour. In particular, the degree of autonomy is related to the extent that motives for initiating behaviour are in line with one's own value system (i.e., intrinsic motivation; Black & Deci, 2000). This self-endorsed autonomous functioning is in contrast to controlled or pressured functioning, where individuals may feel obliged to meet internal or external demands (Okun & Sloane, 2002). Notably, autonomy has been highlighted as a characteristic that creates intrinsically motivated behaviour, which in turn allows individuals to respond more positively to more complex and challenging demands (Hackman & Oldham, 1976; Ryan & Deci, 2000). Therefore, autonomy may directly influence the negotiation of interacting individual and environmental demands. For instance, the cognitive evaluation theory (CET; Ryan, 1985) suggests that autonomy is necessary for the development of optimal functioning. Previous research has shown that increases in perceived competence in a task is associated with an increase in intrinsic motivation, but only in the presence of autonomous decision-making (Fisher, 1978; Ryan, 1982; Ryan & Deci, 2000). Increasing levels of autonomous decision-making has been found to be related to a number of positive outcomes in adolescence, such as higher well-being, better quality of relationships, and fewer externalising problems (Ryan, Deci, Grolnick, & LaGuardia, 2006). While it must be acknowledged that for adolescents, completely independent decision-making (i.e., independent of parents and peers), may not contribute to personal or social well-being, in general, greater autonomy in decision-making is related to adaptive psychosocial functioning in adolescents (Van Petegem et al., 2012). Given that autonomy is an indicator of psychosocial maturity, and is found to be essential for the development of positive outcomes, the current study

hypothesised that autonomy from peers (i.e., resistance to peer influence), is directly related to PYD.

Third, emotion regulations (ER) are also hypothesised to influence adaptive developmental regulations (i.e., PYD). As previously outlined (see Section 2.5.4), emotion regulation is a key feature of how an individual assesses individual-context interactions (Eisenberg et al., 2000). Furthermore, the premise for the social reaction system of decision-making is founded on the ability to evaluate affect quickly and automatically (Zajonc, 1980). Thus, ER may directly influence developmental regulations, and subsequent PYD, through a reactive route of decision-making. This is supported by previous research illustrating that automatic emotion regulation processes, examined using subliminal and affect-priming tasks, are related to adaptive and maladaptive outcomes, such as pathological repression, and spontaneous suppression of emotions, in addition to subjective well-being, problem-solving, and resilience (Egloff, Schmukle, Burns, & Schwerdtfeger, 2006; Mauss, Bunge, & Gross, 2007; Weinberger, 1995). Given the view that emotion regulation can occur automatically (e.g., Mauss et al., 2007), it is likely that the regulation of emotion may influence directly the interacting relations between the individual and their context. Therefore the current study aims to test the direct relationship between emotion regulation and adaptive developmental regulations (i.e., PYD).

Specifically, different emotion regulation strategies are likely to influence developmental regulations in different ways. For example, adaptive emotion regulations (e.g., problem-solving, reappraisal) that use information garnished from the experienced emotion (e.g., anxiety) have been found to facilitate positive behaviour and promote well-being (Power & Dalgleish, 2007; Silk et al., 2003). On the other hand, maladaptive ER strategies (e.g., suppression, rumination) that block, or reject the experienced emotion, lead to increased distress (Betts et al., 2009; Helt et al., 2010; Power & Dalgleish, 2007). However, no previous research has investigated the direct relationship between adaptive and maladaptive ER and PYD.

Another important consideration when assessing emotion regulation is the nature of the resources used to regulate emotions (Eisenberg, Champion, & Ma, 2004; Phillips & Power, 2007). This categorisation is in line with psychological models such as attribution theory (Weiner, 1986), that differentiate between internal-

and external-resources. For example, ER strategies can be categorised as those that utilise personal (i.e., internal) resources or environmental (i.e., external) resources (Phillips & Power, 2007). Young children can be seen to utilise external resources (e.g., seeking comfort), as ER is achieved through the efforts of other people (Kopp & Neufeld, 2003). The use of internal ER strategies (e.g., attention shifting) increases with age and is associated with enhanced regulation (Eisenberg & Spinrad, 2004). The use of both internal and external resources may be considered as functional, or dysfunctional. Therefore, the current study hypothesises that adaptive ER (internal- and external-functional ER) is positively related to PYD, while maladaptive ER (internal- and external-dysfunctional ER) is negatively related to PYD.

Fourth, future orientation may also influence adaptive developmental regulations. A general disposition to consider future goals or consequences of behaviour has been highlighted as a further indicator of psychosocial maturity (Steinberg, 2004). For example, future orientation has been linked to greater risk-aversion (Robbins & Bryan, 2004). Similarly, keeping track of long-term goals, despite opportunities for short-term rewards, is regarded as an important predictor of positive development in adolescents (Gardner et al., 2008). Previous research on the related concept of hopeful future expectations has found a positive relationship with PYD, such that higher hopeful future expectations directly predicted higher PYD scores (Schmid et al., 2011a). However, in general, research examining the relationship between future orientation and positive outcomes is limited. The current study proposes that future orientation may directly influence individual-context interactions, such that higher future orientation is predictive of higher adaptive developmental regulations (i.e., PYD scores).

***Indirect predictors of PYD via SOC.*** In addition to the direct relationship of prosocial values, resistance to peer influence, emotion regulation and future orientation on adaptive regulations, research also supports the influence of these individual factors on the process of goal-directed behaviours (i.e., SOC).

First, in terms of the influence of prosocial values on goal-directed behaviours (i.e., SOC), valuing prosocial behaviour may provide motivational impetus to apply specific behavioural and cognitive skills, such as goal-directed self-



regulation skills (e.g., persistence, planning), toward achieving a desired outcome (e.g., helping a neighbour). Goals that are valued are more likely to be made available for selection and optimisation as they are more likely to be entertained in a particular instance, and achieve higher ranking among potential options (Byrnes et al., 1999). Previous research on self-concept, and in particular self-schemas (i.e., generalisations about the self in specific behavioural domains; Markus, 1977), support the role of valued goals in influencing behaviour. For example, self-schemas can be developed around any aspect of behaviour (Pelham, 1995). Self-schemas then function as motivators and regulators of behaviour (Ruvulo & Markus, 1992). Therefore, adolescents who possess self-schemas around prosocial behaviour (e.g., helping with chores at home is part of my role), and subsequently values prosocial behaviour, may elicit enhanced SOC skills (e.g., persistence) that facilitate increased participation in prosocial behaviours. This is supported by expectancy-value models of behaviour (e.g., Wigfield & Eccles, 2001), which highlight the role of expectancies and values as predictors of persistence of behaviour. Similarly, previous empirical research has showed high levels of intrinsic motivation (i.e., internalised value of activity) facilitated appropriate learning strategies (Pintrich & Schrauben, 1992). Thus, the values associated with a behaviour (e.g., prosocial behaviour) may motivate engagement in, and practice of, SOC skills (e.g., planning, persistence), that subsequently increase engagement in prosocial behaviour.

Prosocial values may influence a variety of SOC strategies. For example, if an adolescent values helping their elderly grandparents and increasing their quality of life, they may be more likely to entertain the idea of volunteering at their nursing home at weekends (i.e., increased selection of goals). In addition, holding prosocial values may motivate the same individual to invest personal resources (e.g., time, money), in order to optimise the output from their goal of volunteering (e.g., volunteering weekly instead of for just an hour; i.e., optimisation). Furthermore, if the pursuit of their goal of volunteering is blocked, for example by moving away from home, then holding prosocial values may motivate the individual to compensate and adjust their goal, for example by raising money for an older adult charity (i.e., compensation). Thus, prosocial values may influence SOC behaviours, which subsequently impact adaptive developmental regulations (i.e., PYD).

Second, in terms of resistance to peer influence, in the presence of positive or negative peer influences, the degree to which an adolescent can act autonomously in their interactions with their peers, may facilitate the ability to resist short-term social rewards often offered by peers, and subsequently facilitate a more conscious appraisal of information. Autonomy in decision-making is related to responsibility, as the action is consciously chosen (Deci & Ryan, 1987). Greater ability to act autonomously in interactions with peers is likely to facilitate reflection on one's self-determined goals, thus help facilitate long-term goals and subsequent positive youth development. Therefore, in line with dual-process accounts of decision-making which differentiates between fast, intuitive decision-making and more reflective, analytic, reasoned decision-making (e.g., Kahneman, 2011), greater autonomy can facilitate more reasoned decision-making. Specifically, greater autonomy in decision-making may minimise a restriction in potential options that are available for selection. By resisting short-term social rewards often offered by peers, potential behavioural options are maximised to include short- and long-term goals. In addition, autonomy in decision-making is likely to lead to better optimisation strategies. For instance, greater autonomy may facilitate decision-making that is more compatible with personal values and abilities, compared to decision-making that is dictated by peers. Thus, greater autonomy from the influence of peers may facilitate better goal-directed strategies (i.e., optimisation and/or compensation). In sum, the current study hypothesises that greater autonomy from peers (i.e., resistance to peer influence), is positively related to SOC behaviours.

Third, emotion regulation (ER) may also influence goal-directed behaviours (i.e., SOC). First, emotions are motivating (Lowe & Ziemke, 2011), therefore emotion regulations (ER) may involve the motivated, conscious modification of experience, behaviour, expression, or the emotion eliciting situation (Eisenberg et al., 1999). Previous research has highlighted the role of emotion feedback and emotion anticipation mechanisms as critical to conducting context-appropriate behaviour and expression (Lowe & Ziemke, 2011). Gross (2007) illustrates the role of anticipating emotion on goal-directed behaviour, as actions can be chosen which are expected to promote the onset of positive emotions, and reduce the likelihood of negative emotions. For example, the anticipation of a task (e.g., class presentation) may lead an individual to feel anxious and subsequently engage in behaviour that

leads to maladaptive developmental regulations (e.g., avoidant behaviour), or adaptive developmental regulations (e.g., planning, practicing). Thus, in this case, the feeling of anxiety can provide useful information about the situation, in that the feeling of anxiety indicates that a good performance is a desired goal. As outlined previously, regulatory strategies can be adaptive when used to process information provided by an emotion to facilitate goal-directed behaviours, or maladaptive when used to block or reject information provided by an emotion (Power & Dalgleish, 2007). Thus adaptive ER is hypothesised to be positively related to goal-directed behaviour, while maladaptive behaviour is hypothesised to be negatively related to goal-directed behaviour. Specifically, adaptive ER may provide motivation for an individual to apply specific behavioural and cognitive skills (e.g., persistence, planning, practice, etc.) toward achieving a desired goal. In addition, emotion regulation functions through feedback, such that an initial response (e.g., shouting) to an emotion (e.g., anger) can be up- or down-regulated before precipitating a secondary response (e.g., planning behaviour; Koole, 2009). Thus, adaptive regulations can facilitate goal-selection, goal-pursuit and self-corrections, which subsequently impact PYD.

Finally, based on recent research assessing the role of the related concept of hopeful future expectations, future orientation may also influence goal-directed behaviours (Schmid et al., 2011a; Schmid et al., 2011b). In line with the motivational role of emotions, higher orientation towards future goals may motivate adolescents to apply goal-directed self-regulation skills (e.g., making lists of things to do, considering future consequences), toward achieving positive developmental outcomes (e.g., passing an exam). While previous research linking future orientation and positive outcomes is lacking, attentiveness to future considerations has been associated with better decision-making (Grisso et al., 2003). Thus, future orientation may facilitate better decision-making and influence PYD via goal-directed behaviours (i.e., SOC). The proposed model is outlined in Figure 2.7.

**2.6.2 Pathways to risky-behaviours, depression and contribution.** In addition to assessing the relationship of prosocial values, resistance to peer influence, emotion regulation, and future orientation on SOC and PYD, the current study will also include additional outcome variables of contribution, risky behaviours, and depression. First, the outcome of contribution was also included in

the current model. Contribution is conceptualised as an exemplar of thriving, where an individual holds an orientation to contribute to healthy family life and/or community institutions (e.g., a sense of civic duty; Lerner, Dowling, & Anderson, 2003). Contribution is seen as an outcome of the Five Cs of PYD, where positive adaptive developmental regulations over time lead to contributions to others (e.g., contribution to family coherence). Apart from research examining the predictive ability of PYD on contribution (e.g., Lerner et al., 2005; Phelps et al., 2009), previous research has not examined further individual predictors of contribution. At a cross-sectional level, PYD and contribution are assessed as separate, related outcomes. However, the individual predictors of contribution would be expected to be similar to the predictors of PYD. Thus, in line with our proposed hypotheses predicting positive associations between the predictors of prosocial values, resistance to peer influence, adaptive emotion regulation and future orientation and the outcome of PYD, similar relationships are expected to hold for the outcome of contribution.

In terms of negative indices of development, it is often assumed that positive and negative outcomes, such as PYD, depression and/or risky-behaviours are inversely related. However, recent research has shown that this simple inverse relationship is not sufficiently complex to explain the relationship between positive and negative outcomes. For instance, although group-level analysis has repeatedly shown the anticipated inverse relationship between PYD and negative indices of development (e.g., Lerner et al., 2005; Phelps et al., 2009), individual-level trajectories of development have shown that individuals evincing a high level of PYD development over five years were also found to display a high level of risk behaviours (Lewin-Bizan et al., 2010). While this finding appears to be inconsistent and counterintuitive, it is in line with previous research showing that adolescents higher in social competence and popularity are more likely to smoke and drink alcohol (e.g., Ennett et al., 2006). Thus, it appears that adolescents who are socially skilful and sensitive to societal demands can adhere to both parental/society values and behaviours (i.e., PYD), in addition to peer-related values and behaviours (i.e., substance use). It is important then to assess other factors that may be involved in the relationship between PYD and risk behaviours. In terms of risk-taking behaviour, our predictors of resistance to peer influence, emotion regulation and

future orientation have been associated with negative behaviours in adolescence, such that lower resistance to peer influence, higher maladaptive emotion regulation, and weaker orientation towards the future is related to higher levels of adolescent problem behaviours (Cauffman et al., 2005; Gardner et al., 2008; Gross, 1998; Kostiuk & Fouts, 2002). Similar relationships have been reported for internal problem behaviour, as future orientation, (Barefoot et al., 2000; Hirsch et al., 2007), maladaptive emotion regulation (Joormann & Gotlib, 2010), and susceptibility to peer influence (Allen et al., 2006) have also been associated with depression. Therefore, the current model will include hypothesised pathways from the individual predictors to negative outcomes of internal and external problem behaviour (i.e., depression and risky-behaviours).

In addition, given our previous hypotheses about the influence of prosocial values, resistance to peer influence, emotion regulation and future orientation on SOC, the current model will also assess the relationships between the predictor variables and positive and negative outcomes via SOC. On the basis of previous research and theory that illustrated the relationship between higher SOC and higher positive and lower negative outcomes (e.g., Baltes et al., 2006; Brandstädter, 2006; Gestsdóttir & Lerner, 2007), it was expected that higher SOC would predict lower levels of depression and risky behaviours, and higher levels of PYD and contribution. The final model including these relationships is shown in Figure 2.7.

As this initial model was cross-sectional in nature, no relationships are specified between positive outcomes and negative outcomes. Previous research has shown that increases in positive outcomes (i.e., contribution) are not related to similar decreases in negative outcomes (Jelicic et al., 2007; Lewin-Bizan et al., 2010). Thus, it appears that increases in positive behaviour is not a function of decreases in negative outcomes (i.e., risky-behaviours and depression), rather positive and negative outcomes are separate, distinct constructs. Other lines of research have suggested similar distinct conceptualisations of positive and negative behaviour, rather than combining both as part of the same continuum. For instance, mental health has been conceptualised as consisting of two related, but distinct constructs; flourishing and languishing (Keyes, 2002). In this model of mental health, the absence of mental illness does not equate to optimal mental health (Keyes, 2006). Thus, positive and negative outcomes may be viewed as

conceptually and empirically distinct constructs, in the cross-sectional model (Study 2B). The relationship of PYD with positive and negative outcomes is assessed using longitudinal data in Study 2C.

***Gender and age differences.*** Research on social and cognitive constructs in adolescence has found numerous instances of age and gender differences (e.g., Lerner et al., 2008; Steinberg et al., 2007; Steinberg et al., 2009). For example, gender differences have been observed in self-esteem (Kaplan, 1986), assertiveness, and self-efficacy, (Radloff, 1975), while age differences across adolescence have been reported in moral thinking (Nucci & Turiel, 2009), self-concept (Harter, 2006), and perceptions of family (Feldman & Gehringer, 1988). Therefore, the relationship between predictors and outcomes in the current model may also be influenced by age and gender.

From a theoretical perspective, age differences in social and cognitive constructs are likely due to the continuing biological, cognitive and social development throughout adolescence (Côté, 2009; Erikson, 1959; Schwartz, Luyckx, & Vignoles, 2011). As adolescents progress through the teenage years, biological maturation (e.g., synaptic pruning) facilitates increasingly abstract self-representations and abilities to self-monitor, self-evaluate, and self-correct (Demetriou, 2000; Erikson, 1950; Harter, 1990). Furthermore, within a changing social context, the developmental tasks to be achieved vary, while measures of achievement and self-concept differ from childhood. For instance, according to Werner's (1957) orthogenetic principle, the domains of self-concept become more differentiated and hierarchically integrated across subsequent portions of development (Harter, 1999). Thus, changes in the salience of different domains, such as the increasing salience of academic success or peer acceptance, and its subsequent impact on health and well-being, is to be expected (Bowers et al., 2010).

From a gender perspective, differences in social and cognitive constructs may be due to the effects of gender socialisation (Bornstein et al., 1999). According to gender-typing, children acquire a gender identity, in addition to the motives, values, and behaviours considered culturally appropriate for members of their biological sex (Shaffer & Kipp, 2007). For instance, in a study of gender-typing practices across 110 non-industrialised societies, attributes of nurturance and obedience and

responsibility were encouraged more in young girls, while self-reliance and achievement were encouraged more in young boys (Barry, Bacon, & Child, 1957). These gender-role standards have changed little, despite more egalitarian gender roles and norms (Boltin, Weeks, & Morris, 2000; Twenge, 1997). For example, college students endorsed the following attributes in women; friendly, cheerful, compassionate, and emotionally expressive; and other attributes in men; rational, ambitious, assertive, athletic (Prentice & Carranze, 2002). In line with this, a recent study of Irish adolescent boys found that performance expectations (e.g., confidence, strength, not caring), emotional restriction (e.g., not showing feelings), and penalties for failing or non-conforming to masculine expectations, were central to male adolescent perceptions of male gender-role (O'Beaglaioich, Sarma, & Morrison, 2014). Thus, gender-typing practices and socialisation of male and female gender roles may influence subsequent gender differences in social and cognitive constructs.

Empirical evidence supports a broad array of age and gender differences in self-regulation related abilities. For example, previous research has highlighted gender differences in self-regulation abilities. A number of meta-analysis studies have illustrated that females exhibit higher motivation and ability to engage in behaviour regulation (Cross et al., 2011; Silverman, 2003). This is found throughout childhood and adolescence (Raffaelli et al., 2005). Age differences have also been highlighted in adolescent self-regulation, with the continued myelination of nerve fibres during adolescence increasing the efficiency of information processing, and leading to improvements in various aspects of executive functioning, such as long-term planning, metacognition, self-evaluation and the coordination of affect and cognition (Keating, 2004; Sowell et al., 2002). Gender and age differences have also been reported in emotion regulation strategies. For example, girls and older adolescents are more likely to use adaptive strategies that aim to solve a problem to feel better, while boys and younger adolescents are more likely to use maladaptive strategies such as disengaging from stressful situations (Eschenbeck et al., 2007; Silk et al., 2003). In terms of age differences in future orientation, a study of 935 participants aged 10-30 years old found significant linear increases in time perspective and anticipation of future consequences (Steinberg et al., 2009). Notably, a curvilinear trend was found for planning ahead, with adolescents (both male and females) aged 12-15 years showing significantly lower planning scores

compared to younger or older individuals. Gender differences were also observed across future orientation subscales, with females reporting significantly higher planning ahead, time perspective and anticipation of future consequences subscale scores (Steinberg et al., 2009). Looking at resistance to peer influence, previous research illustrated a linear increase between the ages of 14 and 18 years (Steinberg & Monahan, 2007). In addition, gender differences in resistance to peer influence have been consistently found, with females more resistant to peer pressure than boys in neutral and antisocial situations (Berndt, 1979; Steinberg & Silverberg, 1986; Steinberg & Monahan, 2007). Thus, older adolescents and females are more likely to characterise themselves as non-conforming to the expectations of peers. In sum, a number of predictors evinced mean differences across gender and age groups.

In terms of outcomes, there is a large literature illustrating gender differences in adolescent problem behaviour, such that boys are more likely to evince higher externalising problems, such as aggression and delinquency, and girls are more likely to report internalising problems, such as depression (Angold & Rutter, 1992; Galambos et al., 2009; Leadbeater, Kuperminc, Hertzog, & Blatt, 1999; Lewinsohn, Hops, Roberts, Seeley, & Andrews, 1993). In terms of PYD, males were found to score lower than females on all five Cs (Lerner et al., 2008). Furthermore, looking at trajectories of PYD over time illustrates that females were overrepresented among higher PYD trajectories compared to males, while males were overrepresented in lower PYD trajectories (Lerner et al., 2008). This finding is supported by related research that showed gender differences in developmental assets, with males averaging three fewer assets than females (Benson, 2002). Similarly, in a national dataset, young males were found to be less likely to elicit social competence compared to females (Youngblade et al., 2007). Given these gender differences, it appears that the manifestation of problem behaviour and PYD among boys and girls, and the pathways to positive development among boys and girls, are different across gender (Lerner et al., 2008). This has serious implications for the development of youth programmes aimed at promoting PYD, as different genders may have different needs throughout adolescence (Vo & Park, 2009). For example, young males may need more support in terms of developing social competence, while young females may need guidance in developing and maintaining self-esteem. Thus, the current



study anticipated that gender differences would be observed in PYD, with females scoring higher in PYD subscale scores.

In terms of the causal pathways, the causal pathways to PYD have not been systematically assessed in previous research. Some model pathways are supported by previous research; for example, the negative impact of adaptive and positive impact of maladaptive emotion regulation strategies on internal- and external-problem behaviour (Silk et al., 2003). Drawing from other domains, research has shown a causal link between behavioural self-regulation and academic achievement outcomes, such that gender differences in behaviour regulation explained gender differences in achievement on standardised tests (Weis, Heikamp, & Trommsdorff, 2013). Thus, given the potential array of differences in mean scores of variables included in the current study, the current study will assess the gender and age differences (and similarities) in the structural model, and the impact on positive and negative indices of development. By highlighting the potential differences in strength of relationships between predictors and outcomes across gender and age groups, the current study will add significantly to research examining gender- and age-specific pathways to positive development. Although several age and gender differences have been outlined above, due to the lack of strong theoretical reasons to predict differences in causal pathways between groups, the current study did not include specific hypotheses. Our primary interest here was to explore the possibilities of gender- and age-specific differences in the specified model that may illuminate different pathways to positive development.

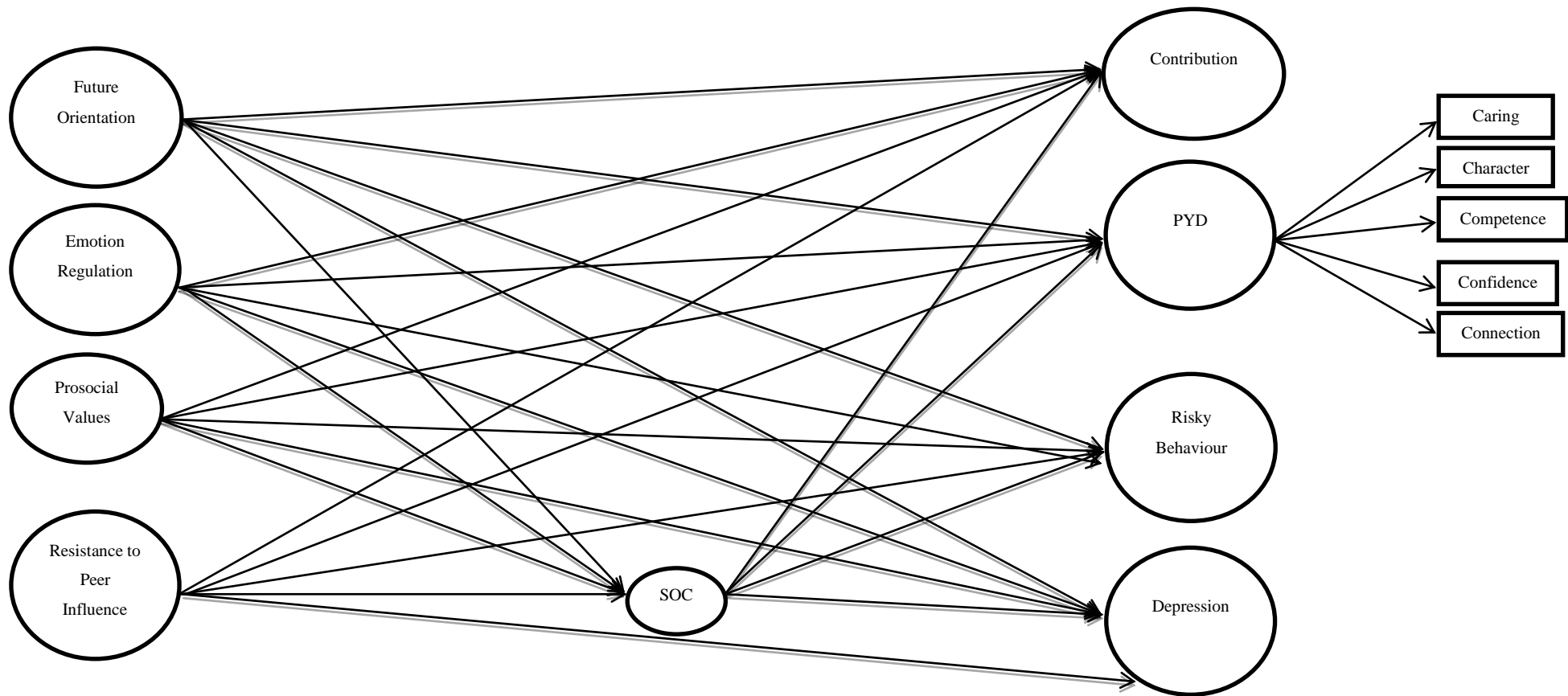


Figure 2.7: Hypothesised relationship of prosocial values, resistance to peer influence, emotion regulation and future orientation on self-regulation (SOC) and as an influencing factor on PYD, Contribution, Risky-Behaviours, and Depression. Age and gender are controlled but not shown in the model.

## 2.7 Outline of Current Research

Research to date has focused on the role of the SOC model on PYD. Several limitations of this work have been outlined (see Section 2.5). The aim of the current thesis is to examine the direct and indirect influence of resistance to peer influence, future orientation, emotion regulation, and prosocial values on SOC (i.e., goal-directed behaviour), PYD, in addition to outcomes of contribution, risky-behaviours and depression. This model will be referred to as the Adolescent Self-Regulation Model. It is hypothesised that resistance to peer influence, future orientation, emotion regulation, and prosocial values will be positively related to PYD and contribution, both directly and indirectly via SOC. In addition, resistance to peer influence, future orientation, emotion regulation, and prosocial values will be negatively related to negative developmental outcomes of risky-behaviours and depression, both directly and indirectly via SOC. Two multi-component studies are proposed in order to investigate these hypotheses.

First, prosocial values have been hypothesised to influence goal-directed behaviour and PYD. However, to the authors knowledge, no research has examined whether youth perceptions of prosocial behaviour influences behaviour or subsequent positive development. Therefore, a key task of the current research is to first assess youth perceptions of prosocial behaviour, and subsequently examine the relationship with positive development.

Study 1 focuses on the development of a measure of adolescent prosocial perceptions and examines the influence of prosocial values on behavioural similarity, behavioural favourability, and behavioural willingness. Using the prototype/willingness model as a theoretical framework (Gibbons & Gerrard, 1995), Study 1A first assesses the salience of prosocial behaviour images. In order to have an impact on behaviour, social-images must be considered clear and vivid (i.e., have clearly attributable characteristics). Therefore Study 1A will examine the salience of a range of prosocial behaviours in a sample of Irish adolescents.

In Study 1B, the content of the prosocial images rated as most salient are examined. This involves a qualitative investigation of the characteristics attributed to the selected prosocial behaviours. By using qualitative methods, the study allows the language and perceptions of adolescents to be maintained. Following this study,

12 characteristics (positive and negative) associated with prosocial behaviours are collated into a measure, with higher scores indicating greater endorsement of positive values of prosocial behaviour.

Finally, using the measure developed in the previous study, Study 1C examines whether prosocial values predict behavioural similarity, behavioural favourability, and behavioural willingness. According to the prototype/willingness model (Gibbons & Gerrard, 1995), social-images influence motivational aspects of behaviour (i.e., behavioural favourability and similarity), with greater endorsement of positive characteristics related to higher favourability of, and similarity to, a behaviour. This in turn is hypothesised to influence behavioural willingness, a precursor to engagement in the actual behaviour (Gibbons & Gerrard, 1995). Higher favourability and similarity are hypothesised to increase willingness to engage in a specified behaviour. Therefore, as the basic motivational aspects of behaviour related to social images, in the current study we test whether prosocial values influence the social-reaction route of decision-making (i.e., behavioural willingness). If prosocial values are found to play a role in behavioural willingness, prosocial values are then examined as predictors of positive development (i.e., PYD) more broadly in Study 2.

Study 2 is aimed at testing the relationships between prosocial values, emotion regulation, peer influence, future orientation, goal-directed behaviour, and outcomes of PYD, contribution, risky-behaviours and depression. However, before testing these relationships, it is necessary to first assess the psychometric properties of the PYD measure (Study 2A).

A number of concerns about the Five Cs Model of PYD were previously raised regarding; the indicators used to operationalize the Five Cs PYD Model across adolescence; the conceptual clarity of the Five Cs; concerns about the manifestation of PYD across gender; and concerns about the generalizability of a measure of PYD outside of North America. For instance, previous research has used different indicators to measure PYD across adolescence (Lerner et al., 2005; Phelps et al., 2009; Bowers et al., 2010). For example, athletic competence was added to the original PYD measure as a subscale of competence (Phelps et al., 2009), and subsequently removed (Bowers et al., 2010). In addition, constructs of caring,

character and confidence have undergone revisions. Regarding conceptual clarity, moderate to high inter-correlations were found between PYD factors, suggesting conceptual overlap between factors (Lerner et al., 2005). In addition, previous research has tested and re-fit the hypothesised PYD models on the same sample, thus running the risk of over-fitting the model to the data (Byrne, 2010). In terms of PYD across gender, notable differences in gender profiles of PYD have been observed. For example, higher PYD scores have been observed in females compared to males (Lerner et al., 2005; Phelps, et al., 2009). While the Five Cs model provides a broad measure of PYD, it is important to assess whether higher scores for females over males is due to differences in underlying indicators (e.g., positive identity), or differences in actual latent mean scores. Finally, there are concerns about the generalizability of a measure of PYD outside of North America. Irish adolescents may have different interpretations of PYD compared to North American adolescents. Extending the research on PYD to European samples, and in particular Irish adolescents, is therefore crucial in order to provide a robust and useful tool for research and applied work with young people.

Given these concerns, Study 2A will test the factor structure of the Five Cs Model of PYD measure using Confirmatory Factor Analysis (CFA). Confirmatory factor analysis plays a key role in the development of measures as it tests theoretical prepositions by evaluating the fit of specified models to data (Brown, 2006). When knowledge of an underlying latent variable structure (e.g., the 5 Cs Model of PYD) is derived from theory and/or empirical research, CFA is recommended (Byrne, 2010; Fabrigar, Wegener, MacCallum, & Strahan, 1999). Using CFA addresses the outlined concerns as follows. First, CFA allows the testing of PYD indicators to examine whether they are applicable in an independent sample. Second, CFA may also provide conceptual clarity, as an independent sample CFA can assess whether the previously found inter-correlations are substantive (e.g., other variables may be needed to explain the variance) or methodological (e.g., inadequate application of CFA). For instance, a methodological issue would be over-fitting the data to the sample. Thus, cross-validating the Five Cs model with an independent sample of adolescents is warranted. Third, multiple-group CFA analyses are used to examine how indicators of PYD function across gender. Finally, the generalizability of the confirmed PYD factor structure is assessed by examining the reliability and

construct validity of the PYD measure (i.e., testing the hypothesised relationships between PYD and contribution, risky-behaviours, and depression).

Study 2B then assesses the hypothesised influence of resistance to peer influence, future orientation, emotion regulation, and prosocial values on SOC (i.e., goal-directed behaviour), PYD, and additionally the outcomes of contribution, risky-behaviours and depression. First, the measurement model of each variable is tested by conducting a CFA on each measure. Second, in order to test the hypothesised relationships simultaneously (see Figure 2.7), Structural Equation Modelling (SEM) is used. Finally, multi-group SEM analyses are used to assess whether the proposed relationships differ between younger and older adolescents and across gender groups.

Study 2C presents analyses further investigating the properties of the PYD measure using longitudinal data at 12-month follow-up. A number of analyses are conducted. First, further exploration of the psychometric properties of the Five Cs model of PYD was conducted. For example, the construct validity of the Five Cs model was tested by examining the predictive ability of PYD scores at time 1, with outcomes at time 2. Second, using the hypothesised relationships outlined in study 2B, this study aims to further test the predictive ability of prosocial values, peer influence, future orientation, emotion regulation and SOC at time 1, on PYD, contribution, risky-behaviours and depression 12-months later. Third, data from time 1 and time 2 are used to assess the stability of the PYD construct across 12-months. This was assessed at both a group-level, using rank-order stability correlation coefficients, and at an individual-level, using cluster analysis. Cluster analysis assesses individual patterns of change in PYD scores over the 12-months, and creates representative groups of change (e.g., individuals who increased in PYD scores, individuals who remained stable in PYD scores). Finally, this study analyses the characteristics of the different groups of change, in order to examine whether they differ significantly on the predictor variables at time 1. One-way ANOVAs were used to examine whether resistance to peer influence, future orientation, emotion regulation, prosocial values, SOC, contribution, risky-behaviours and depression at time 1, and parental style measured at time 2, differed according to membership of different change groups (e.g., increasing PYD scores versus decreasing PYD scores). Thus, the key characteristics of adolescent self-regulation

and development were examined to obtain a further insight into the profiles of change in PYD scores, and gain an understanding into what factors underlie optimal development.

**2.7.1 Summary of overall aims and specific objectives.** The goal of the current thesis is to further research both cross-sectionally and longitudinally on the Five Cs Model of PYD, and to examine and expand the role of adolescent self-regulation and the conceptual model of positive youth development. These goals are obtained through two studies, which are summarised above. The objectives of these studies are outlined in Table 2.2.

In sum, the current research has three primary aims. First, research is needed to provide clarity on the concept and measurement of PYD in an Irish context. Furthermore, the current study aims to extend the measurement of factors of adolescent self-regulation and assess their impact on positive and negative indices of development. Third, using longitudinal data at 12-months follow-up, the predictive ability of individual factors of adolescent self-regulation on positive and negative outcomes can be assessed. In addition, the changes in PYD scores over 12-months can be examined, and the characteristics associated with optimal change revealed. By assessing the role of key factors of self-regulation and positive development, we significantly extend PYD research. Examining the predictors of PYD is necessary to provide an empirical foundation for youth programmes aimed at fostering successful adolescent development. These goals are important in order to provide a useful measurement instrument of positive development in Ireland, provide an empirical foundation for skill development in youth development programmes, and inform Irish youth policy.

Table 2.2

*Summary of study research questions and objectives*

<b>Study</b>	<b>Research Question</b>	<b>Objective</b>
<b>Study 1</b>	- What role do prosocial values play in behavioural decision-making?	- To ascertain whether prosocial values are related to behavioural willingness.
<b>Study 1A</b>	- Are adolescent prosocial prototypes as salient as health-related prototypes in order to impact behaviour?	- To compare the salience of prosocial prototypes with health-related behaviours
<b>Study 1B</b>	- What are the characteristics of prosocial prototypes?	- To qualitatively assess the characteristics of prosocial prototypes
<b>Study 1C</b>	- What is the structure of prosocial prototypes and is it related to favourability, similarity, and behavioural willingness?	- To examine the structure of prosocial prototypes using exploratory factor analysis, and assess the predictive ability of prosocial prototypes on favourability, similarity, and behavioural willingness.



Study 2	Is the Five Cs Model of PYD a valid and reliable measure of positive functioning in Irish adolescents? Using a theoretically derived dual-process framework of Adolescent Self-Regulation, what are the predictors of positive and negative outcomes cross-sectionally and over 12-months? What characteristics are associated with changes in PYD over 12-months?	
Study 2A	<ul style="list-style-type: none"> <li>- Is the Five Cs model of PYD valid and reliable in an Irish sample?</li> <li>- Is the manifestation of the Five Cs model of PYD applicable across age and gender groups?</li> </ul>	<ul style="list-style-type: none"> <li>- Assess the structure, reliability, and validity of the Five Cs in a sample of adolescents using confirmatory factor analysis</li> <li>- Use multigroup analyses to compare the Five Cs model across age and gender groups</li> </ul>
Study 2B	<ul style="list-style-type: none"> <li>- Using a dual-process framework, do the hypothesised individual factors of prosocial images, emotion regulation, peer influence, future orientation, and SOC predict PYD, and outcomes of contribution, risky-behaviours and depression?</li> <li>- Are the hypothesised relationships similar across age and gender groups?</li> </ul>	<ul style="list-style-type: none"> <li>- Assess the theoretically derived relationships between prosocial images, emotion regulation, peer influence, future orientation, SOC, and outcomes of PYD, contribution, risky-behaviours and depression, using Structural Equation Modelling (SEM).</li> <li>- Use multigroup analyses to assess the model across age and gender</li> </ul>

Study	Research Question	Objective
Study 2C	<ul style="list-style-type: none"> <li>- Do the hypothesised factors predict PYD, contribution, risky-behaviours and depression 12-months later?</li> <li>- How do PYD scores change over 12-months?</li> <li>- What self-regulation characteristics are related to optimal PYD development over 12-months?</li> </ul>	<ul style="list-style-type: none"> <li>- Assess the relationships using SEM and outcome data at 12-months follow-up.</li> <li>- Assess the group and individual-level changes in PYD over 12-months.</li> <li>- Assess the self-regulation characteristics related to optimal PYD development over 12-months using one-way ANOVAs.</li> </ul>

### 3. Chapter Three

#### Study 1: Role of Prosocial Values in Adolescent Behaviour

##### 3.1 Chapter Overview

The aim of this thesis is to assess the role of prosocial values, in addition to a number of other factors, and its relationship with goal-directed behaviours and PYD. As there is no previous measure of adolescent prosocial behaviour values, the goal of Study 1 is to create a measure of prosocial prototypes (i.e., perception of attributes, characteristics or values associated with prosocial behaviour). In order to create a measure, a series of studies were undertaken: First, it is necessary to assess the salience of prosocial behaviours to adolescents (Study 1A); second, the characteristics attributed to prosocial behaviours are explored (Study 1B); and finally, the relationship between prosocial prototypes and aspects of behaviour engagement (i.e., prototype favourability, similarity and behavioural willingness), are tested (Study 1C). Each of these studies are outlined below.

##### 3.2 Introduction

Prototypes refer to an individual's image of the typical person who belongs to a group or engages in certain behaviour (Ouellet et al., 2005). Prosocial prototypes in particular then, are an individual's image of the typical person who belongs to a group or engages in prosocial behaviour. Prosocial behaviours are any voluntary positive social behaviours intended to benefit another person (Eisenberg & Fabes, 1998). Prototypes of behaviour are important as they have been found to represent an individual's values and characteristics associated with behaviours (e.g., Gibbons & Gerrard, 1995; Rivas et al., 2006). For example, a typical smoker may be considered "cool" and typify values of rebelliousness or non-conformity.

Assessing the values and characteristics associated with desired goals is essential for promoting positive outcomes (Allen et al., 1989). As previously outlined in Chapter 2, values may influence behaviour in two distinct ways; first in line with expectancy-value models of behaviour, values may provide motivational impetus to apply specific behavioural and cognitive skills, such as goal-directed self-regulation skills (e.g., persistence, planning), toward achieving a desired outcome. Second, in line with dual-process models of decision-making (e.g., Gibbons &

Gerrard, 1995) values may influence behaviour automatically, or through a social-reactive route of decision-making. This is the focus of Study 1 and is outlined below.

In the following study (Study 1), the influence of values and characteristics associated with prosocial prototypes are assessed for their ability to predict willingness to engage in prosocial behaviour, thus assessing the social-reactive route of decision-making. Following the creation of a measure of prosocial prototypes, the influence of prosocial values and characteristics on SOC and PYD is examined in Study 2.

**3.2.1 The prototype/willingness model.** Although much of the prior research on adolescent decision-making has assumed that engagement in behaviours (e.g., exercise, volunteering) is based on intentional, reasoned cognitive processes (e.g., Blue, 1995; Greenslade & White, 2005; Okun & Sloane, 2002), most decisions are determined by systematic reasoning and reactionary processes (Gerrard et al., 2008). As previous outlined, heuristics and immediate impulses may exert a larger influence over the likelihood of engaging in an action, as reasoned-choice models tend to explain around 31% of the variance in health-related behaviour (Armitage & Conner, 2001), models of both reasoned and reactionary processes can account for up to 79% of the variance in behaviour (Gerrard et al., 2002).

Social images, or *prototypes*, are proposed as central to the reactionary processes of decision-making (Gibbons & Gerrard, 1995). Social-image studies focus on the images that individuals have of certain behaviours, and of the type of person who carries out the behaviour (e.g., a typical smoker; Gibbons & Eggleston, 1996). This is similar to stereotypes, which is a categorisation process of people into perceived homogeneous social groups<sup>5</sup> (Hamilton, Dugan, & Troler, 1985). A prototype is an individual's image of the typical person who belongs to a group or engages in a certain behaviour (Ouellette et al., 2005). Prototype perceptions are proposed to influence behaviour through their impact upon behavioural willingness,

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<sup>5</sup> Given that stereotypes contain an implicit negative connotation (i.e., prejudice; Devine, 1989), we refer to prototype images as "social-images".

which is defined as the “recognition that one would be willing to engage in the behaviour under some circumstances” (Gibbons & Gerrard, 1995, p. 79).

The role of prototype images in decision-making is conceptualised in the Prototype/Willingness model (Gibbons & Gerrard, 1995). This model is built on the premise that social acceptance is of great importance to adolescents, therefore their engagement in certain behaviours (e.g., smoking) may be thought of as a social reaction to social circumstances, rather than a planned event. Building upon expectancy-value approaches (e.g., theory of planned behaviour; Ajzen, 1991) that highlight the role of beliefs and attitudes in decision-making, the prototype/willingness model emphasise the less deliberate modes of decision making (Rivers & Reyna, 2008). For example, while the theory of planned behaviour proposes that concepts of subjective norms, perceived behavioural control, and attitudes directly impact behavioural intentions, the concept of “willingness” appears to be more a sensitive measure than expectation or intention for directly predicting engagement in behaviour (Gerrard et al., 1995). Willingness is influenced by the perceived favourability of, and similarity to, a perceived behaviour (Rivis et al., 2006). Thus, the values and characteristics associated with a behaviour may influence the evaluation of the behaviour as favourable or similar to the self.

People usually have well-elaborated images (i.e., can attribute characteristics) of the type of person who engages in different behaviours even if they have not tried the behaviours themselves (e.g., skateboarders; Amos, Gray, Currie, & Elton, 1997). Prototype images are usually distinct and have a number of different attributes associated with them. For example, most adolescents can describe the typical smoker or typical drinker their age (e.g., “cool”, “sociable”, “boring”), even if they do not have personal experience with the behaviour itself.

Two motivational mechanisms are proposed to underline the impact of prototype perceptions on behavioural willingness; an individual’s evaluation of the prototype (i.e., favourability), and perceived similarity (Gibbons & Gerrard, 1995; Rivis & Sheeran, 2006). Previous research on health-risk images illustrated that greater perceived favourability and greater perceived similarity to the prototype health-risk image (i.e., smoking, drinking alcohol), predicted onset and increases in those behaviours. Thus, higher perceived favourability and similarity were related to

a greater inclination (i.e., motivation) to engage in the prototype behaviour (Gerrard & Gibbons, 1995; Ravis & Sheeran, 2006). Similarly, research on smoking cessation reported that smokers attempting to quit decreased in favourability of and similarity to prototypical smokers (Gibbons, Gerrard, Lando, & McGovern, 1991). This *distancing* was particularly pronounced among research participants who successfully quit smoking (Gibbons et al., 1991). Thus, perceived favourability of, and similarity to, a prototypical image helps motivate changes in facilitating, or inhibiting, behaviour.

The prototype/willingness model has been used to explain various health-related behaviours among adolescents, such as drinking alcohol (Gerrard et al., 2002), smoking (Gibbons, Gerrard, Blanton, & Russell, 1998), safe sex (Blanton et al., 2001), eating behaviour (Gerrits et al., 2009) and exercising (Ouellette et al., 2005), in addition to other altruistic behaviours among adults such as organ donation (Hyde & White, 2009). Thus, the prototype/willingness model has significantly predicted a range of positive and negative health behaviours in adolescents.

**3.2.2 Prototypes and prosocial behaviour.** Of particular interest in the present study, is how adolescents perceive engagement in prosocial behaviour. Prosocial behaviours are any voluntary positive social behaviours intended to benefit another person (Eisenberg & Fabes, 1998). However, there is a dearth of research exploring the characteristics of positive images, and their role in prosocial behaviour. Previous research has found that young people hold mixed views of the kinds of people who carry out prosocial behaviour, for example, people who volunteer have been identified as “self-righteous”, stereotypically “middle-aged housewife with nothing better to do”, “caring”, and “altruistic” (Foster & Fernandes, 1996; Gaskin, 1998). However, as prosocial behaviours are often a social event (e.g., helping somebody with an activity), socialisation effects of parents or peers may be an important factor in adolescent’s prosocial behaviour (Laible, Carlo, & Roesch, 2004). For instance, Barry and Wentzel (2006) found that a best friend’s prosocial behaviour was related to adolescent’s prosocial behaviour over one year. Therefore the values associated with particular behaviours (e.g., volunteering) may have a significant impact on guiding adolescent’s uptake of behaviour.

**3.2.3 Measuring prototypes.** Prototypes are assessed by asking participants to evaluate a typical person their age who engages in the behaviour under study (e.g., who volunteers), using a series of adjectives depicting personal characteristics. In research using the Prototype/Willingness model, the content of these adjectives emphasises the favourability of health-related behaviours. For example, participants may be asked to rate the characteristics of a typical smoker on a likert scale (from 1-7). A list of characteristics (e.g., cool, friendly, boring [reversed-scored]) are presented, with higher scores indicating more positive attributes associated with the behaviour. This measure has been used with a number of different types of behaviour (e.g., drinking alcohol, Gerrard et al., 2002; smoking, Gibbons et al., 1998; safe sex, Blanton et al., 2001), suggesting that it could be used as a generic measure for behavioural prototypes. This generic prototype measure encompasses 12 characteristics; smart, cool, popular, careless, dull, childish, good-looking, confused, self-confident, considerate, independent, and selfish. However, more recently, it has been recommended to assess the unique characteristics associated with specific behaviours in order to maximise the validity and meaningfulness of the characteristics (Gerrits et al., 2009). These measures derive characteristics that are specific to the behaviour under examination (e.g., adolescent smoking, Spijkerman, Van Den Eijnden, & Engles, 2005; eating behaviour, Gerrits et al., 2009). For example, unique characteristics of eating behaviour prototypes included “sloppy”, “chubby”, and “slim”. Given that previous research has shown both positive and negative characteristics associated with prosocial behaviours such as volunteering (Foster & Fernandes, 1996; Gaskin, 1998), the current study, as recommended by Gerrits and colleagues (2009), will focus on elucidating the characteristics that are specifically related to prosocial behaviour for adolescents.

However, in order to assess the content of prosocial prototypes, it is necessary to ascertain what prosocial behaviours are most salient to adolescents. Social images must be salient and clear enough to have an influence on behaviour. Therefore, we first examine the vividness and clarity of a number of prosocial behaviours (Study 1A), and then examine the characteristics of the images rated most salient to adolescents (Study 1B). Finally, Study 1C will examine the relationship between prosocial values and prototype favourability, prototype similarity, and behavioural willingness.

### 3.3 Study 1A

**3.3.1 Purpose of Study 1A.** In order for social images to have an impact on behaviour, these images must be clear and salient. To the authors' knowledge, no previous study has examined the social images that adolescents hold of prosocial behaviours. Therefore, an initial study was conducted to examine the vividness and salience of prosocial behaviours for adolescents.

**3.3.2 Background.** In order to examine the vividness and salience of prosocial behaviours, a list of prosocial behaviours relevant to adolescents was created. To maintain theoretical consistency, prosocial behaviours were created and chosen based on Lerner and colleagues (2005) concept of contribution. Contribution is broadly defined as behaviours indicative of youth thriving. Founded on healthy interactions with their context (i.e., adaptive regulations), contribution emerges from an individual's sense of moral duty (Lerner et al., 2003; Youniss et al., 1999). This moral duty to contribute exists because, as individuals benefiting from a supportive social system, it is necessary to be actively engaged in, at least, maintaining and, ideally, enhancing that social system (Youniss et al., 1999). Therefore, an individual's orientation to contribute, for example to contribute to healthy family functioning (e.g., by helping with chores) and/or supporting community institutions (e.g., engaging with and supporting local youth groups), is an exemplar of thriving youth (Lerner et al., 2003).

There is a large degree of overlap between contribution behaviours and prosocial behaviours. Prosocial behaviours are defined as voluntary positive social behaviours intended to benefit another person (Eisenberg & Fabes, 1998). Thus, the behaviours are unidirectional, aimed at benefiting another individual, and are widely considered characteristic of positive development (i.e., thriving; Csikszentmihalyi & Rathunde, 1998). Contribution behaviours on the other hand, are based on developmental systems theory, and constitute a broader conceptualisation of positive behaviours, aimed at supporting, and enhancing, interactions within the social system, that subsequently benefit other individuals and institutions (Lerner et al., 2003). In this way, behaviours that are indicative of contribution, for example to family (e.g., looking after younger siblings), community (e.g., volunteering in nursing home), and civil society (e.g., advocating for equal rights), may also be



considered as prosocial as they benefit other individuals. Thus, in line with the conceptualisation of contribution, a list of prosocial behaviours was created under the themes of leadership, service (to others), and helping (Lerner et al., 2005). These behaviours are outlined in the measures section below.

**3.3.3 Method.** The following method section describes the research participants for Study 1A, and details of the measures used in Study 1A. In addition, as the same procedure was used for Study 1A, Study 1B, and Study 1C, this is outlined below. Any deviations from this procedure are detailed in the specific studies.

**Participants.** Participants for Study 1A were 120 adolescents recruited from three secondary schools (1 single-sex school [boys] and 2 mixed-sex schools) and three youth groups in mid- and north-west Republic of Ireland. Their mean age was 14 years and 5 months ( $SD = 1.59$  years; range 12-18 years, 84.2% male). To maximise the representativeness of adolescents' ratings, students from every school year were targeted and recruited (1<sup>st</sup> year  $n = 48$ , 40%; 2<sup>nd</sup> year  $n = 15$ , 12.5%; 3<sup>rd</sup> year  $n = 32$ , 26.7%; 4<sup>th</sup> year  $n = 9$ , 7.5%; 5<sup>th</sup> year  $n = 9$ , 7.5%; 6<sup>th</sup> year  $n = 7$ , 5.8%).

**Procedure.** A standard procedure for recruitment and assessment was used for Study 1A, Study 1B, and Study 1C. This procedure is outlined below.

Ethical approval for Study 1 (A, B, and C) was obtained by the Research Ethics Committee at the National University of Ireland, Galway. Participants were recruited from Post-Primary schools and local youth groups. Schools were selected from a comprehensive list of schools provided by the Department of Education and Skills website ([www.education.ie](http://www.education.ie)), while youth groups were selected from a list provided by the Youth Work Ireland website ([www.youthworkireland.ie](http://www.youthworkireland.ie)). Schools and youth groups were contacted initially by a letter to the Principal/Board of Management/ or Senior Manager (see Appendix A). Approximately one week later, the initial letter was followed by telephone contact. Specific to Study 1A, five Post-Primary schools, and five youth groups were invited to participate in the research. Two schools declined due to time constraints, and two youth groups declined due to ongoing research commitments. Following approval, a meeting with the selected classes/youth groups was arranged. Information sheets (Appendix B) and consent forms (Appendix C) were distributed. Participants were asked to bring the

information sheets and consent forms home to their parent(s)/guardian(s) to obtain parental consent. Participants were asked to return the signed consent form to their teacher/youth group leader within a week. Two weeks later, the questionnaire was distributed to participants in class/at youth group meeting who returned parental consent. The questionnaire for Study 1A consisted of a demographic questionnaire and the measure of vividness of prosocial behaviours (see Appendix D). The information sheet and student assent form were also included. On completion, assent forms were collected and participants were instructed to seal the questionnaire in the envelope provided. The questionnaire for Study 1A took approximately 10 minutes to complete. After taking part, all participants were debriefed and encouraged to ask questions about the research.

**Measures.** In order to measure the vividness and clarity of prosocial behaviours, first, it was necessary to select appropriate prosocial behaviours to include. Based on Lerner and colleagues (2005) definition of contribution, a number of criteria for the selection of behaviours were outlined; 1) example behaviours must be salient for younger and older adolescents; 2) example behaviours must represent specific behaviours; and 3) example behaviours must be related to one of the three themes outlined by Lerner and colleagues (2005; i.e., leadership, service, and helping).

The prosocial behaviours were derived following consultations with a number of experts in youth work. Following the consultation process, the following items were selected: (1) volunteers in the community (e.g. working for the elderly); (2) takes part in drama/theatre; (3) helps their neighbours; (4) is a class/group leader; (5) helps parents with chores (e.g. cleaning); (6) promotes environmental awareness; (7) takes part in a youth group; (8) helps family member with housework/school work; (9) works part-time; and (10) someone who participates or gives to others in some way<sup>6</sup>.

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<sup>6</sup> Although “someone who participates or gives to others in some way” does not refer to a specific behaviour, the consultation with youth experts suggested the inclusion of this item.

To assess the salience of the prosocial behaviours, participants read the following instructions; “Indicate how vivid and clear your image is of someone your age who”. This is followed by the ten prosocial behaviours outline above. Thus, participants attempt to construct a mental image of an individual, of the same age, who engages in a specific behaviour (e.g., an image of someone who is a class/group leader). Respondents were then asked to rate the vividness of each behavioural image on a 7-point scale (1 = *not at all clear or vivid* to 7 = *very clear or vivid*).

In addition to assessing the vividness and clarity of prosocial behaviours, following procedures by Gerrits and colleagues (2009), this study compared the vividness of prosocial behaviours to common health-related behaviours. Health-related behaviours are included as the characteristics of behaviours, such as exercise and smoking, have been found to be salient enough to influence subsequent behaviour (Gibbons et al., 1991; Ouellette et al., 2005). Therefore, if prosocial behaviours are comparable to health-related behaviours in terms of vividness and salience, it strengthens our argument that prosocial behavioural images can influence behaviour. Thus, the following health-related behaviours were included; [someone your age who] (a) exercises regularly; (b) does not exercise regularly; (c) smokes; (d) does not smoke; (e) drinks alcohol; (f) does not drink alcohol; (g) eats healthily; and (h) does not eat healthily. See Appendix D for the final measure. These images were presented in random order, and were also measured on a 7-point scale (1 = *not at all clear or vivid* to 7 = *very clear or vivid*). Age and gender of participants were also reported.

**Analysis.** The mean score for each of the 18 behaviours (10 prosocial and 8 health-related) was calculated. Repeated one-way ANOVAs were subsequently used to assess whether mean scores for the most vivid and clear prosocial behavioural images were significantly different than other behaviours.

**3.3.4 Results.** The results are presented in three parts; first, prosocial behavioural images only are examined. This is followed by a brief description of the vividness of the health-related behaviours. Finally, the vividness of the prosocial behavioural images is compared to the health-related behaviours.

**Prosocial images.** Of the 10 prosocial behaviours, the image of “helping parents with chores” ( $M = 4.87$ ,  $SD = 1.73$ ) and “taking part in youth group” ( $M =$

4.80,  $SD = 1.83$ ) were rated the highest for clarity and vividness. The least vivid were images of someone who “promotes environmental awareness” ( $M = 2.73$ ,  $SD = 1.79$ ), followed by someone who “take part in drama/theatre” ( $M = 3.21$ ,  $SD = 1.84$ ). See Table 3.1 for means and standard deviations of all 10 prosocial images for the full sample ( $N = 120$ ), and for younger adolescents (Junior cycle  $N = 95$ ) and older adolescents (Senior Cycle  $N = 25$ ). Looking at age differences, independent t-tests were conducted to compare clarity ratings between Junior cycle and Senior cycle age groups. A significant difference was observed between age groups for the image of taking part in drama,  $t(116) = 3.27$ ,  $p = .001$ , where senior cycle adolescents rated the image as more clear and vivid ( $M = 4.24$ ,  $SD = 1.59$ ) compared to Junior cycle adolescents ( $M = 2.94$ ,  $SD = 1.82$ ). No other differences were found between age groups and ratings of prosocial behaviour images ( $p$ 's  $> .05$ ).

A repeated one-way ANOVA was conducted to examine whether the most vivid behaviours (i.e., “helping parents with chores” and “taking part in youth group”) were significantly more vivid than the other prosocial images. Results illustrated that the vividness of prosocial behaviours were significantly influenced by the type of prosocial behaviour,  $F(7.75, 666.78)^7 = 17.79$ ,  $p < .001$ , partial  $\eta^2 = .17$ . In particular, the image of “helping parents with chores” was significantly more clear and vivid than volunteering in the community, taking part in drama/theatre, being a class/group leader, and promoting environmental awareness ( $ps < .001$ ). In addition, the image of “taking part in a youth group” was significantly more clear and vivid than volunteering in the community, taking part in drama/theatre, and promoting environmental awareness ( $ps < .001$ ).

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<sup>7</sup> Mauchley's test of sphericity was significant,  $W(44) = 0.45$ ,  $p = .017$ , therefore Greenhouse-Geisser figures were reported as recommended (Field, 2009).

Table 3.1

*Mean, standard deviations and sample size for vividness of prosocial and health behavioural images*

<b>Image – “Someone who...”</b>		<b>Full Sample</b>			<b>Junior Cycle</b>			<b>Senior Cycle</b>		
		<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
<b>1.</b>	Exercises regularly	116	6.00	1.22	92	6.04	1.20	24	5.83	1.27
<b>2.</b>	Does not smoke	119	5.54	2.03	94	5.65	1.99	25	5.12	2.13
<b>3.</b>	Eats healthily	119	5.09	1.59	94	5.11	1.62	25	5.04	1.51
<b>4.</b>	Helps parents with chores	119	4.87	1.73	94	4.84	1.80	25	5.00	1.44
<b>5.</b>	Takes part in a youth group	119	4.80	1.83	95	4.66	1.87	24	5.33	1.55
<b>6.</b>	Does not drink alcohol	118	4.63	2.18	93	4.69	2.24	25	4.40	2.00
<b>7.</b>	Participates or gives to others in some way	98	4.60	1.80	78	4.60	1.88	20	4.60	1.54
<b>8.</b>	Helps a family member with house/school work	119	4.49	1.75	95	4.43	1.79	24	4.71	1.57

<b>9.</b>	Helps their neighbours	118	4.19	1.71	93	4.11	1.79	25	4.48	1.39
<b>10.</b>	Does drink alcohol	120	4.08	2.48	95	3.62	2.42	25	4.48	1.39
<b>11.</b>	Works part-time	119	4.02	1.94	94	3.87	1.97	25	4.56	1.76
<b>12.</b>	Does not eat healthily	120	3.93	1.98	95	3.63	1.86	25	5.08	2.04
<b>13.</b>	Is a class/group leader	116	3.70	1.85	91	3.52	1.86	25	4.36	1.68
<b>14.</b>	Does smoke	119	3.66	2.44	94	3.11	2.29	25	5.72	1.84
<b>15.</b>	Volunteers in the community	119	3.45	1.89	94	3.47	1.94	25	3.36	1.75
<b>16.</b>	Does not exercise regularly	118	3.26	1.97	93	2.91	1.80	25	4.56	2.04
<b>17.</b>	Takes part in drama/theatre	118	3.21	1.84	93	2.94	1.82	25	4.24	1.59
<b>18.</b>	Promotes environmental awareness	113	2.73	1.79	90	2.68	1.81	23	2.96	1.72

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*Note.* Possible range of scores = 1-7; SD = Standard deviation.

**Health images.** Of the health-related behaviours, the image of “exercising regularly” was rated the most clear and vivid ( $M = 6.00$ ,  $SD = 1.22$ ), followed by someone who “does not smoke” ( $M = 5.54$ ,  $SD = 2.03$ ). The least vivid behaviour was someone who “does not exercise regularly” ( $M = 3.26$ ,  $SD = 1.97$ ) followed by “someone who smokes” ( $M = 3.66$ ,  $SD = 2.44$ ). A repeated one-way ANOVA illustrated that the health behaviour of “exercising regularly” was significantly more clear and vivid than all other health behaviours ( $ps < .001$ ), with the exception of the non-smoker behaviour ( $p > .05$ ). Overall, positive health-related behaviours (i.e., exercising regularly, not smoking, not drinking alcohol, and eating healthily) were rated as more vivid than negative health-related behaviours (i.e., not exercising, drinking alcohol, smoking, and eating unhealthily; see Table 3.1).

**Comparing prosocial and health-related behaviours.** Looking at the mean scores of all 18 behaviours, three health-related behaviours were rated as the most vivid; exercising regularly, not smoking, and eating healthily. This was followed by two prosocial behaviours, “helping parents with chores” and “taking part in a youth group”. In general, the majority of behaviours evidenced a moderate level of vividness, as average scores for the majority of behaviours were above the midpoint of the scale. The exceptions were the behaviours of volunteering in the community, taking part in drama/theatre, promoting environmental awareness, and not exercising, which all scored below the midpoint of the scale on vividness.

Looking at comparisons between prosocial and health-related behaviours, all prosocial behaviours were rated as less vivid and clear than exercising regularly ( $p < .001$ ), while “helping parents with chores” and “taking part in a youth group” behaviours were rated as more vivid and clear than “someone who does not exercise regularly” ( $p < .001$ ). In terms of prosocial behaviours, helping parents with chores, taking part in a youth group, and to a lesser degree, participating or giving to others in some way, appear to be comparable to health-related behaviours such as (non)smoking, (non) alcohol drinking, and (un)healthy eating. Thus, adolescents hold reasonably vivid images of typical prosocial behaviours, in particular helping parents with chores and taking part in a youth group, which are comparable to that of social images of other health-related behaviours.

**3.3.5 Summary of Study 1A.** Social-image studies focus on the images that individuals have of certain behaviours, and of the type of person who does the behaviour (e.g., a typical smoker; Gibbons & Eggleston, 1996). People usually have well-elaborated images of the type of person who engages in different behaviours even if they have not tried the behaviours themselves (Amos et al, 1997). However, in order for social images to have an impact on behaviour, these images must be clear and salient (Gerrits et al., 2009). To the best of our knowledge, no previous study has examined the social images that adolescents hold of prosocial behaviours. Therefore, an initial study was conducted to examine the most salient prosocial behaviours. Results illustrated that the prosocial images of “helping parents with chores”, “taking part in a youth group”, and “participating or giving to others in some way” were the most vivid images of prosocial behaviours held by a sample of Irish adolescents. These images were found to be reasonably vivid, and comparable to a number of social images of other health-related behaviours. Thus, the images of “helping parents with chores” and “taking part in a youth group” were used in subsequent studies to assess the characteristics associated with prosocial behaviours.

### 3.4 Study 1B

**3.4.1 Purpose of Study 1B.** The purpose of Study 1B was to explore the characteristics that adolescents associate with prosocial behaviours.

**3.4.2 Background.** Following recommendations from previous research on social images (Gerrits et al., 2009), the current study sought to explore the unique characteristics associated with the two prosocial behaviours rated as most vivid from Study 1A: helping parents with chores; and taking part in a youth group<sup>8</sup>.

In order to provide an appropriate means through which adolescents could share their perceptions of prosocial behaviours, open-ended questions were utilised. This method was chosen as structured questions potentially limit the response categories available, while open-ended questions allow participants to answer in

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<sup>8</sup> As the behaviour “participating or giving to others in some way” did not constitute a specific behaviour, and to minimise participant burden, this behaviour was dropped.



their own words and in a manner that reflects the participant's own perceptions (Frey, 2004).

### 3.4.3 Method.

**Participants.** Participants for Study 1B were 34 adolescents recruited from one rural secondary school (mixed-sex school) in the western region of the Republic of Ireland. Their mean age was 14 years and 6 months ( $SD = 2.00$  years; range 12-19 years, 29.4% female). Students from junior and senior classes were recruited (1<sup>st</sup> year  $n = 17$ , 50%; 3<sup>rd</sup> year  $n = 13$ , 38.2%; 6<sup>th</sup> year  $n = 4$ , 11.8%).

**Procedure.** The procedure for Study 1B was outlined in Section 3.3.2. Details specific to Study 1B are outlined here. Specific to Study 1B, four out of five schools that were invited to participate in the research, declined due to time constraints. The questionnaire for Study 1B consisted of a demographic questionnaire and the measure of prosocial behaviour characteristics (see Appendix E). The questionnaire took approximately 30 minutes to complete.

**Measures.** A questionnaire using an open-ended format was distributed to all participants during scheduled class time. Derived from instructions by Gerrits and colleagues (2009), all participants first read the following instruction:

“When trying to describe someone, people generally use characteristics of that person. For example, if you describe someone your age that always gets good marks, you might say that person is smart, serious, and bookish. We are interested in what you think of people your age that **help their parents with chores**<sup>9</sup>. In this case, we are interested in your impression of other people (positive and/or negative). We would like you to think about the typical person **your age that helps their parents with chores**. When you think about this person, what is your impression of them? What images come to mind?”

Writing space was given to participants to record their initial response. Participants then further read, “We would like to know more about your impression

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<sup>9</sup>A second question replaces “help their parents with chores” with “takes part in a youth group”.

of this image. Please think carefully about it. On the following pages, we will ask you to write a description of different characteristics of this image.” To ensure careful consideration of the behaviour, participants were asked to imagine and think about the image for a few minutes before writing about it; they then answered eight questions about the image beginning with an overall open-ended question: (1) “What was the first thing that came to mind when you thought of this image?” participants are given approximately 10 min to answer the first question and encouraged to describe the image with as much detail as possible. This was followed by seven other questions asking for the specific details about the image; that is, (2) appearance, (3) general health, (4) energy level, (5) attitude toward life, (6) achievements, (7) relationships of the person they imagined, and finally, (8) anything else that came to mind about the image. It is important to note that these questions were presented separately (i.e., on separate pages) from the first. The same format was used for both prosocial images. Questions assessing demographic information (i.e., age, gender) were also included.

**Analysis.** The author reviewed the text from the open-ended questions relating to prosocial behaviour. The “helping parents with chores” image yielded 154 different responses (i.e., meaning pieces of information available for coding), while the “taking part in a youth group” yielded 92 different responses. For the purposes of transparency, transcripts from 17 individuals (50%) were also inspected by an independent reviewer. Coding was carried out using guidelines developed for thematic analysis (Braun & Clarke, 2006).

Step 1 involved reading the responses multiple times, and thus becoming familiar with the data. Interesting and important aspects of the responses including phraseology were noted. Step 2 involved the researcher reading the responses and identifying synonyms and responses that were related and unrelated to characteristics of prosocial behaviour. Responses deemed unrelated to characteristics of prosocial behaviour were physical characteristics (e.g., “short”, “small” or “tall”). In step 3, 50% of transcripts were inspected by an independent coder. Any emergent disparities between the author and the independent coder were discussed and resolved. The remaining transcripts were then coded by the author. In step 4, quotes of characteristics were inspected to see if they matched the generated codes. Finally, in step 5, characteristics were further refined and consolidated by comparing the

generated characteristics with the generic prototype measure (Gibbons et al., 1998). The generic prototype measure used 12 adjectives (i.e., smart, confused, popular, immature, cool, self-confident, independent, careless, unattractive, dull, considerate, and self-centred).

Inclusion criteria were developed to guide the coding process. These criteria included merging characteristics, synonyms, and their antonyms to create a single characteristic (e.g., smart, clever, not smart). In addition, a characteristic was identified if (including synonyms), 10% or more of individuals listed the adjective for either behaviour. This criterion was used in order to maximise the number of characteristics identified in the study.

**3.4.4 Results.** Twelve characteristics emerged from the adolescents' responses. Respondents indicated that characteristics associated with prosocial images of helping parents with chores and taking part in a youth group included: 1) Smart, 2) Kind, 3) Sporty, 4) Friendly, 5) Respectful, 6) Attractive, 7) Popular, 8) Hardworking, 9) Caring, 10) Mature, 11) Independent, and 12) Boring. See Table 3.2 for number of individuals and percentage of participants who endorsed each characteristic for each image. Table 3.3 provides details of each characteristic, including definitions, synonyms and antonyms of each characteristic.

Table 3.2

*Number and percentage of individuals who endorsed characteristics of image 1 (helping parents with chores) and image 2 (taking part in a youth group).*

Characteristic	Helping Image		Participation Image	
	<i>N</i>	%	<i>N</i>	%
Smart	12	35.29	2	5.88
Kind	29	85.29	4	11.76
Sporty	8	23.53	9	26.47
Friendly	7	20.59	8	23.53
Respectful	8	23.53	2	5.88
Attractive	10	29.41	4	11.76
Popular	7	20.59	23	67.65
Caring	4	11.76	3	8.82
Boring/Fun	3	8.82	6	16.22
Hardworking	9	26.47	0	-
Mature	9	26.47	0	-
Independent	4	11.76	0	-

The reported characteristics illustrate behaviour-specific trends. For example, characteristics of “kind”, “attractive” and “smart” are commonly used to describe the helping parents with chores image, while “popular”, “sporty” and “friendly” are used to describe the participation in a youth group image. Furthermore, some characteristics emerged solely for the helping image, such as “hardworking”, “mature”, and “independent”.

Characteristics used to describe prosocial behaviours included both individual (e.g., smart) and social attributes (e.g., popular). The number of antonyms identified was generally low (see Table 3.3). The 12 characteristics identified appear relatively independent, although some characteristics, such as friendly and popular, may overlap conceptually. However, previous research with adolescents has illustrated a conceptual difference between popularity and perceived friendliness and likability (Eder, Evans, & Parker, 1995). Thus, these characteristics were maintained as independent attributes.

Table 3.3

*Definitions, frequency, synonyms, and antonyms of characteristics of prosocial behaviours*

Characteristic	Definition	Most reported characteristic <sup>a</sup>	Synonyms	Antonyms
Smart	Individual attribute indicating intelligence or academic success	“Smart” ( <i>n</i> = 12, 35.29%)	“High-achiever” ( <i>n</i> = 1, 2.94%)	“Not good at school” ( <i>n</i> = 1, 2.94%)
Kind	Positive individual attribute indicating an orientation towards helping others	“Helpful” ( <i>n</i> = 12, 35.29%)	“Nice” ( <i>n</i> = 10, 29.41%) “Good” ( <i>n</i> = 5, 14.71%) “Generous” ( <i>n</i> = 4, 11.76%) “Thoughtful/considerate” ( <i>n</i> = 3, 8.82%) “Lovely” ( <i>n</i> = 1, 2.94%)	-
Sporty	Individual orientation towards engagement in sports and activities	“Sporty” ( <i>n</i> = 10, 29.41%)	“Active” ( <i>n</i> = 8, 23.53%)	“Not active” ( <i>n</i> = 1, 2.94%) “inactive” ( <i>n</i> = 1, 2.94%)

Characteristic	Definition	Most reported characteristic <sup>a</sup>	Synonyms	Antonyms
Friendly	Positive social attribute facilitating friendship	“Friendly” ( <i>n</i> = 14, 41.18%)	-	“Not much friends” ( <i>n</i> = 1, 2.94%)
Respectful	Individual attribute indicating acceptance of social hierarchy	“Respectful” ( <i>n</i> = 8, 23.53%)	“Polite” ( <i>n</i> = 1, 2.94%)	-
Attractive	Positive physical attributes of individuals	“Well-dressed” ( <i>n</i> = 11, 32.35%)	“Pretty” ( <i>n</i> = 3, 8.82%)	
Popular	Social attribute indicating social competence of individuals	“Popular” ( <i>n</i> = 10, 29.41%)	“Sociable” ( <i>n</i> = 7, 20.59%) “Outgoing” ( <i>n</i> = 4, 11.76%)	“Shy” ( <i>n</i> = 7, 20.59%) “Unsociable” ( <i>n</i> = 1, 2.94%) “Low social skills” ( <i>n</i> = 1, 2.94%)
Caring	Individual attribute indicating empathic tendencies towards others	“Caring” ( <i>n</i> = 5, 14.71%)	“Loving” ( <i>n</i> = 1, 2.94%)	“Carefree” ( <i>n</i> = 1, 2.94%)

Characteristic	Definition	Most reported characteristic <sup>a</sup>	Synonyms	Antonyms
Boring/fun	Individual attribute indicating willingness to engage in socially prescribed events	“Fun” ( <i>n</i> = 6, 17.65%)	-	“Boring” ( <i>n</i> = 2, 5.88%) “Dull” ( <i>n</i> = 1, 2.94%)
Hardworking	Individual attribute indicating engagement in tasks	“Hardworking” ( <i>n</i> = 7, 20.59%)	“Good-worker” ( <i>n</i> = 1, 2.94%) “Not-lazy” ( <i>n</i> = 1, 2.94%)	-
(Im)Mature	Individual attribute indicating “adult-like” behaviour	“Honest” ( <i>n</i> = 4, 11.76%)	“Serious” ( <i>n</i> = 1, 2.94%) “Obedient” ( <i>n</i> = 2, 5.88%)	“Complaining” ( <i>n</i> = 2, 5.88%)
Independent	Individual attribute indicating autonomy	“Responsible” ( <i>n</i> = 2, 5.88%)	“Sensible” ( <i>n</i> = 1, 2.94%) “Not influenced by others” ( <i>n</i> = 1, 2.94%)	-

<sup>a</sup> = most popular characteristic aggregated across the two behaviours.



**3.4.5 Summary of Study 1B.** A total of 12 characteristics of prosocial images were identified (see Table 3.3). Looking at the generic prototype measure (Gibbons et al., 1998), a number of characteristics appear to overlap. For instance, taking synonyms and antonyms into account, eight characteristics of the generic prototype measure were identified in the present sample (i.e., smart, popular, immature [antonym = mature], independent, careless [antonym = caring], unattractive [antonym = attractive], dull [synonym = boring], and considerate [synonym = kind]. However, four unique characteristics of the prosocial behaviours were identified; sporty, friendly, respectful, and hardworking. Thus, future research can assess whether differences in how these 12 characteristics are endorsed is related to motivational antecedents of prosocial behaviour (such as behavioural favourability and similarity), and willingness to engage in prosocial behaviour.

Some characteristics were endorsed more frequently than others. For example, the most frequently endorsed characteristic identified was the adjective “kind”, which was predominately used to describe young people who helped their parents with chores. For the image of young people taking part in a youth group, the adjective “popular” was endorsed most frequently. This appears to illustrate the underlying difference between the two images. The helping behaviour appears to be perceived as more illustrative of a positive internal attributes (i.e., kind, smart), while the participation image (taking part in a youth group) was illustrated most frequently by interpersonal characteristic (i.e., popular, sporty, friendly). This pattern can also be illustrated with other characteristics, as positive internal attributes such as hardworking, mature, and independent, were endorsed exclusively, for the helping image.

Research examining the antecedents of behaviour has supported the perspective that individuals are more likely to engage in behaviours if they endorse favourable characteristics of the type of person who typically engages in these actions (e.g. Gerrard et al., 1999). These characteristics are proposed to impact two motivational aspects influencing decisions to engage, or inhibit engagement, in behaviours; prototype favourability and prototype similarity (Gibbons & Gerrard, 1995; Ravis & Sheeran, 2006). In the current study, 12 characteristics were identified that were considered relevant by adolescents for describing their peers who engage in prosocial behaviour. Consequently, this list can be assessed in an

independent sample of adolescents to ascertain the structure of prosocial prototypes, and examine whether prosocial prototypes are related to prototype favourability, prototype similarity, and willingness to engage in prosocial behaviour.

### 3.5 Study 1C

**3.5.1 Purpose of Study 1C.** The purpose of Study 1C was to determine the structure of adolescents' prosocial prototypes, and whether the more positive evaluations of prosocial prototypes is related to the perceived favourability of prosocial behaviour, the perceived similarity of someone who engages in prosocial behaviour, and self-reported willingness to engage in prosocial behaviour.

**3.5.2 Background.** According to the social reaction route of the prototype/willingness model, perceptions of prototypes (i.e., social-images) predict decisions in two ways: the degree of liking one has for the image (prototype favourability), and similarity of the image to oneself (prototype similarity; Gibbons & Gerrard, 1995; Ravis et al., 2006). In particular, endorsement of positive characteristics attributed to the prototype is proposed to lead to more positive evaluations (i.e., favourability) and increased perceived similarity to the prototype, and thus lead to greater willingness to engage in the behaviour described in the prototype (Gibbons & Gerrard, 1995; Ravis et al., 2006). See Figure 3.1 for an illustration for the social reaction route of the prototype/willingness model.

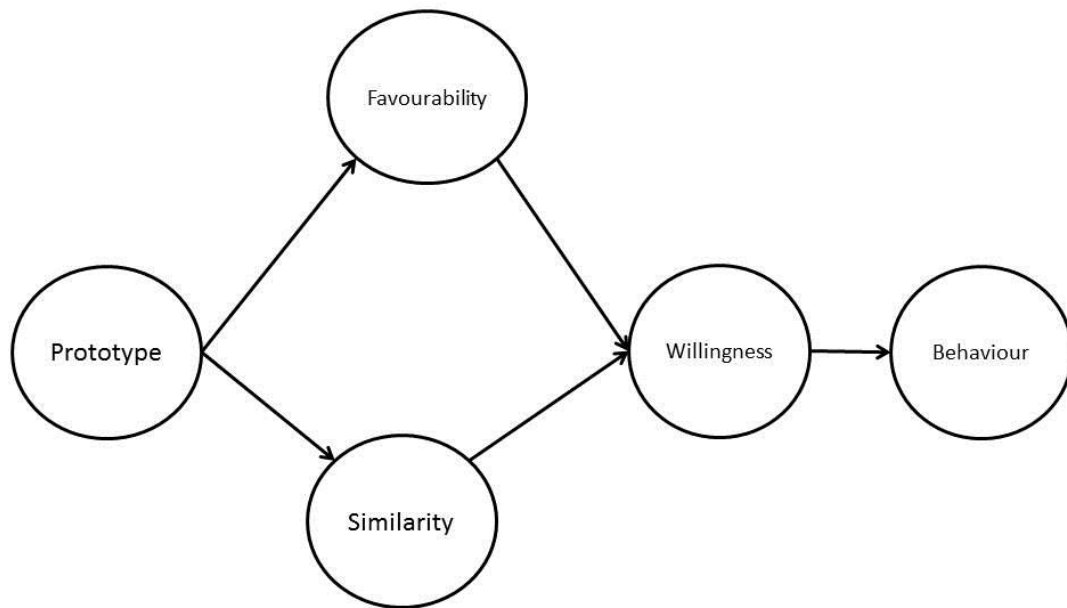


Figure 3.1

*The Social Reaction Path of the Prototype/Willingness Model* (Gibbons & Gerrard, 1995).

Few research studies have looked at the role or structure of prototypes of positive or health-protective behaviours. Previous research looking at health-risk behaviours has illustrated that adolescents' prototypes of individuals who engage in risk behaviours are mixed, with favourable (e.g., typical smoker is cool), and unfavourable characteristics (e.g., typical non-smoker is "boring") associated with behaviours (Rivis et al., 2006; Piko, Bak & Gibbons, 2007). Piko, Bak and Gibbons (2007) used factor analysis to assess the factor structure of smoker prototypes. As anticipated (Gerrard et al., 2002; Rivis et al., 2006), positive and negative factors emerged. This consisted of three distinct prototype factors; negative prototypes (i.e., dull, childish, confused, and selfish), positive social appearance prototypes (i.e., cool, popular, careless and self-confident), and positive individual competence prototypes (i.e., smart, good-looking, considerate, independent, and self-confident).

The negative prototype was significantly associated with non-smoking status across the sample (age range 14-21, mean 16.2 years), while the positive individual competence prototype was associated with smoking status in boys only.

Furthermore, findings suggested that the role of negative prototypes on inhibiting smoking for non-smokers was greater than the role of positive prototypes facilitating smoking for smokers (Piko et al., 2007). Thus, negative perceived images of people who engaged in smoking appeared to be particularly influential in determining adolescent behaviour (Blanton et al., 2001; Piko et al., 2007), with significant differences across gender. The positive prototype factors did not consistently facilitate behaviour, with the positive individual competence prototype factor facilitating behaviour in boys only. This may be related to masculine ideals of independence and perceived competence (Smith, Braunack-Mayer, Wittert, & Warin, 2007).

Research on the relationships between prosocial prototypes and adolescent behaviour is lacking. In terms of the structure of adolescents' perception of prosocial behaviours, previous research suggests mixed characteristics (e.g., "self-righteous", "middle-aged"; Foster & Fernandes, 1996; Gaskin, 1998). However, no research has systematically investigated the characteristics and structure of prototypes of prosocial behaviours. How favourably or unfavourably an image is perceived by adolescents (regardless of whether the image is "risky" or "non-risky", "prosocial" or "non-prosocial"), is likely to be a key determinant of whether or not the image could be a goal state for adolescents, and thus shaping the role of prototype images in facilitating or inhibiting behaviour (Rivis et al., 2006).

Thus, the current study had two primary goals: 1) to assess the structure of prosocial prototype images; and 2) to evaluate whether prosocial prototypes are related to the perceived favourability of prosocial behaviour, the perceived similarity of someone who engages in prosocial behaviour, and self-reported willingness to engage in prosocial behaviour.

### **3.5.3 Method.**

**Participants.** Participants for Study 1C were 208 adolescents recruited from one mixed-gender secondary school in the north-west of Ireland. Their mean age was 15 years and 5 months ( $SD = 1.49$  years; range 12.67-18.23 years, 54.24%

male). To maximise the representativeness of adolescents' ratings, students from junior and senior classes were targeted and recruited (1<sup>st</sup> year  $n = 42$ , 21.9%; 2<sup>nd</sup> year  $n = 37$ , 19.3%; 3<sup>rd</sup> year  $n = 38$ , 19.8%; 4<sup>th</sup> year  $n = 29$ , 15.1%; 5<sup>th</sup> year  $n = 46$ , 24.0%). Sixteen participants did not report their class in school.

**Procedure.** The procedure for Study 1C was outlined in Section 3.3.2. Details unique to Study 1C are outlined here. Specific to Study 1C, four out of five schools that were invited to participate in the research, declined due to time constraints. The questionnaire for Study 1C consisted of a demographic questionnaire, the prototype measure, prototype evaluation, prototype similarity and behavioural willingness questions (see Appendix F). The questionnaire took approximately 35 minutes to complete.

### Measures.

**Prosocial Prototypes.** The measure of prosocial prototypes developed in Study 1B was used in the current study. A total of 12 characteristics were used to assess two prosocial behaviours, helping parents with chores and taking part in a youth group (i.e., Smart, Kind, Sporty, Friendly, Respectful, Attractive, Popular, Hardworking, Caring, Mature, Independent, and Boring). One issue that arose was the prevalence of positively framed characteristics. Positively framed characteristics may lead to problems of acquiescence, where participants are agreeable to the items in general (i.e., rate positive characteristics highly because they are positive), rather than responding to the content of the items (Buckingham & Saunders, 2004). In order to avoid this issue, we sought to counter-balance positive and negative adjectives. Therefore, the antonym of the following adjectives were used; mature (used *immature*), caring (used *careless*), attractive (used *unattractive*), and respectful (used *disrespectful*). Thus, the final list of characteristics used in the prosocial prototype measure were; Smart, Kind, Sporty, Friendly, Disrespectful, Unattractive, Popular, Hardworking, Careless, Immature, Independent, and Boring. The final measure used in included in Appendix F.

Participants were asked to “think for a moment about the characteristics you think describes someone your age who helps their parents with chores/takes part in a youth group”, and then to rate them each of the 12 characteristics outline. Each

adjective was measured on a seven-point scale ranging from “Not at all” (1) to “extremely” (7).

Our primary interest is in whether characteristics of prosocial behaviours are related to subsequent PYD. Hence, we sought to ascertain the factor structure of overall prosocial behaviours, as opposed to the factor structure of each of the specific prosocial behaviours (i.e., a factor structure for helping parents, and a factor structure for participation in a youth group). Therefore, the scores on each characteristic were averaged across both prosocial images in order to derive the factor structure of overall prosocial behaviour (e.g., the “boring” scores for both helping parents with chores and participating in a youth group, were averaged to create an overall “boring” item score). These averaged scores were then used in exploratory factor analysis.

**Prototype evaluation.** Prototype evaluation was assessed by the evaluation thermometer (Haddock & Zanna, 1994). In this measure of favourability of an image, participants were asked to indicate “how favourable your impression is of the type of person your age who engages in the behaviour listed below”, rated on a 100-point scale (*extremely unfavourable* to *extremely favourable*). The mean favourability ratings of helping parents with chores and participating in a youth group were computed.

**Prototype similarity.** Prototype similarity was assessed by participants response to the question; “In general, how similar are you to the type of person your age who does the following?” This question was followed by a rating on a 7-point likert scale (1 = *not at all similar to me*, to 7 = *very similar to me*). The mean similarity ratings of helping parents with chores and participating in a youth group were computed.

**Behavioural willingness.** Behavioural willingness was examined by participants responding to the question; “How willing would you be to do each of the following over the next two weeks?” This was rated on a 7-point likert scale (1 = *Definitely not willing to do this*, to 7 = *Definitely willing to do this*). The mean willingness ratings of helping parents with chores and participating in a youth group were computed. All measures are included in Appendix F.

**Analysis.** The analysis was carried out in two stages. First, an exploratory factor analysis (EFA) was conducted to ascertain the structure of the prosocial prototype. This was followed by linear regression analyses to explore the predictive ability of the prototype factors on favourability of prosocial behaviours, similarity of prosocial behaviours, and willingness to engage in prosocial behaviour.

**Exploratory Factor Analysis.** Factor analysis was conducted on overall average characteristic scores in order to examine the potential underlying latent factors of prosocial images. Exploratory factor analysis (EFA) is deemed an appropriate analytic tool as EFA allows the underlying relationships between items and factors to be unknown. Therefore, the average scores of each characteristic for prosocial images were subjected to EFAs.

The appropriateness of using EFA on the data was examined using Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. A statistically significant Bartlett's test signifies that the variables being analysed are related to one another, and that the correlation matrix for the data is an identity matrix (Morrison & Morrison, 2006). The KMO measure of sampling adequacy indicates that factor analysis is appropriate with values above .60 (Tabachnick & Fidell, 2007). With the current measure, Bartlett's test was statistically significant ( $ps < .001$ ) and the KMO statistic above .60 (KMO = .80). In addition, the current sample ( $N = 208$ ) is above the minimum sample requirements for factor analysis (Nunnally & Bernstein, 1994; Pallant, 2010). Therefore, it was appropriate to run EFA on the data.

The dimensionality of each measure was examined using principal axis factoring (PAF) with oblique rotation (direct oblimin, delta set at zero). This extraction method fits common factor models to data without distributional assumptions (Fabrigar et al., 1999). Oblique rotation was applied as some degree of interrelatedness among factors was expected. Two methods were used to inform decisions regarding the number of factors to retain. In addition to the examination of the screeplot, parallel analysis was used (O'Connor, 2000; Watkins, 2005). A screeplot is a graph of the factor eigenvalues. To know how many factors to retain, it is necessary to count the number of data points above where the curve flattens out, excluding the data point where the break occurs (Costello & Osborne, 2005). The

second method of informing factor analysis is parallel analysis. This process generates eigenvalues from a number of random data sets that match (or are parallel to) the actual data set in relation to number of participants and variables. Eigenvalues are then compared between the random data set and the actual data set. The number of factors to retain is shown when a random data eigenvalue becomes larger than the corresponding real data eigenvalue (Thompson , 2004).

***Item reduction.*** Each factor was assessed for the presence of redundant items. This was assessed by; high correlations between variables (i.e., if two items correlated with each other in excess of .90, the item with the lower factor loading was deleted; Field, 2009; Furr & Bacharach, 2008); For the purpose of retaining items, the minimal acceptable factor loading was set at .30 (Field, 2009), with no cross-loadings great than .32 (Worthington & Whittaker, 2006).

***Additional analysis.*** The factor scores derived from the EFA were computed and applied as prosocial prototype scores in subsequent analyses. Gender and age differences were examined using independent t-tests. Separate linear regression analyses were used to examine the relationship between prosocial prototype factor scores and favourability of prosocial behaviours, similarity of prosocial behaviours, and willingness to engage in prosocial behaviours.

**3.5.4 Results.** Means, standard deviations and scale score range for the characteristics of the combined prosocial images are displayed in Table 3.4.



Table 3.4

*Mean scores, standard deviations and scale score range for prosocial images.*

Characteristic	Combined Prosocial Behaviour		Possible Range	Actual Range
	M	SD		
Smart	4.79	1.09	1-7	1-7
Kind	5.38	1.23	1-7	1-7
Sporty	4.77	1.39	1-7	1-7
Friendly	5.60	1.10	1-7	1-7
Disrespectful	2.06	1.04	1-7	1-6
Unattractive	2.65	1.27	1-7	1-7
Popular	4.68	1.16	1-7	1-7
Careless	2.65	1.32	1-7	1-7
Boring	2.46	1.25	1-7	1-7
Hardworking	5.34	1.28	1-7	1-7
Immature	2.71	1.35	1-7	1-7
Independent	4.88	1.35	1-7	1-7

**Results of EFA.** By applying the above criteria, all 12 items were retained for the characteristics associated with prosocial images. Looking at Kaiser's criterion of 1 (eigenvalues above 1; Field, 2009), three factors were suggested, explaining a total of 60.44% of the variance. Inspection of the scree plot suggested the retention of two factors. Furthermore, parallel analysis (Watkins, 2005) suggested that a two-factor solution be retained (i.e., the first two eigenvalues for the real data [4.09, 2.07, 1.11], exceeded the first two eigenvalues of the random data [1.42, 1.30, 1.21]). Thus the analysis was repeated forcing a two-factor solution, which accounted for 51.30% of the total variance (see Table 3.5 for eigenvalues and factor loadings). The 12 characteristics clustered on two factors representing a negative prototype factor (5 items), and a positive prototype factor (7 items). The items and factor loadings after rotation are shown in Table 3.5. The average factor loadings were .64 (positive prototype) and .62 (negative prototype), illustrating a moderate degree of correlation between items and their corresponding factors.

Alpha coefficients, confidence intervals, and descriptive statistics (i.e., mean and range) for the combined prosocial image scores are displayed in Table 3.5. Reliability analyses were carried out for the factors of the combined prosocial images. Internal reliability was good, ranging from .76 to .81.

Table 3.5

*Factor structure for the combined prosocial image*

	Negative Prototype (eigenvalue = 4.09)	Positive Prototype (eigenvalue = 2.07)
	Factor Loadings	
Careless	.68	
Immature	.63	
Unattractive	.56	
Disrespectful	.74	
Boring	.50	
Friendly		.79
Popular		.55
Independent		.63
Kind		.62
Hardworking		.58
Smart		.71
Sporty		.58
Cronbach's alpha	.76	.81
(95% CI)	(95% CI = .70 - .81)	(95% CI = .76 - .85)
<b>Total Factor Scores</b>	<b>M (SD)</b>	<b>Range</b>
Negative Prototype	0.05 (0.89)	-3.11 – 1.90
Positive Prototype	- 0.01 (0.89)	-1.48 – 2.67

**Gender and age differences.** Independent t-tests were conducted to assess age (early adolescence [11-15 years] vs. late adolescence [16-19 years]) and gender differences in factor scores for the combined prosocial images. Gender differences were found in the positive prototype factor,  $t(187) = 2.86, p = .005$ , with males rating positive prototype images significantly higher ( $M = 0.15, SD = 0.88$ ) than females ( $M = -0.21, SD = 0.86$ ). No differences were found between age groups ( $ps > .05$ ).

**Regression analyses.** Linear regression analyses were conducted to examine whether the prosocial prototype factors (i.e., positive prototype and negative prototype) were predictive of favourability of prosocial prototypes and similarity to prosocial prototype. Age and gender were included as control variables (see Table 3.6).

Using separate linear regression analyses, results revealed that prosocial prototype factors significantly predicted prototype favourability,  $F(4,182) = 11.30, p < .001$ , and also significantly predicted prototype similarity,  $F(4,176) = 16.45, p < .001$ . Specifically, the positive prototype positively predicted prototype favourability ( $\beta = .21, p < .01$ ), while the negative prototype negatively predicted favourability ( $\beta = -.31, p < .001$ ). In terms of prototype similarity, gender ( $\beta = .16, p < .05$ ) and positive prototype ( $\beta = .37, p < .001$ ) were positive predictors, and negative prototype ( $\beta = -.17, p < .05$ ) negatively predicted prototype similarity (see Table 3.6). Thus lower endorsement of negative characteristics and higher endorsement of positive characteristics were related to greater favourability of the prosocial behaviours and greater perceived similarity to the prosocial behaviours.

Table 3.6

*Linear regressions of prototype evaluation and prototype similarity on age, gender and prototype factors.*

	Prototype Favourability				Prototype Similarity			
Prosocial	$\beta$	B	SE	t	$\beta$	B	SE	t
Age	-.10	-1.36	0.93	-1.47	-.04	-0.04	0.07	-0.56
Gender	-.06	-2.71	2.99	-0.90	.16	0.49	0.21	2.35*
Positive Prototype	.21	5.07	1.86	2.73**	.37	0.67	0.13	5.11***
Negative Prototype	-.31	-7.71	1.92	-4.01***	-.17	-0.31	0.13	-2.32*
$r^2$	.20				.27			
$\Delta r^2$	.18				.26			

*Note.* \* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$ . Gender – “0” = female, “1” = male.

Linear regression analyses were then conducted to examine whether the prosocial prototype factors, prototype favourability, and prototype similarity, predicted behavioural willingness (see Table 3.7). As prototypes may be more strongly related to decisions when a person believes that they are similar to the type of person who engages in the behaviour and has a favourable impression of that type of person, the interaction between prototype similarity and prototype evaluation was also included in the analyses (Gibbons et al., 1995; Ravis et al., 2006).

Results showed that prosocial prototype factors, prototype favourability, and prototype similarity, significantly predicted willingness to engage in prosocial behaviours,  $F(7,173) = 37.26, p < .001$ . A significant unique effect was observed for prototype similarity ( $\beta = 0.62, p < .001$ ), accounting for 38.44% of the variance (Table 3.7). Thus, greater similarity was uniquely related to willingness to engage in prosocial behaviours. No other factor was significantly related to willingness. These findings suggest that, while positive and negative image characteristics are related to motivational aspects of decision making, contributing 2.89% - 13.69% of the respective variance in favourability or similarity, overall, the most important contributor to behavioural willingness was perceived similarity to the image. Thus, if a young person can identify as similar to a prosocial prototype image, they are more willing to perform the prosocial behaviour.

Indirect effects were also calculated using guidelines developed by Preacher and Hayes (2008). Separate multiple mediations were conducted, where the indirect effect of the prototype factor on behavioural willingness was tested through prototype favourability and prototype similarity. Mediation analyses showed no significant indirect effects of positive prototype ( $p = .07$ ) or negative prototype factor scores ( $p = .07$ ) on behavioural willingness.

Table 3.7

*Linear regressions of behavioural willingness on prototype evaluation, prototype similarity, age, gender and prototype image factors.*

	$\beta$	B	SE	t
Age	-.03	-0.04	0.05	-0.68
Gender	.01	0.03	0.17	0.20
Positive Prototype	.07	0.14	0.11	1.25
Negative Prototype	-.08	-0.15	0.11	-1.35
Evaluation	.12	0.01	0.01	1.96
Similarity	.62	0.65	0.06	10.16***
Evaluation x Similarity	-.02	-0.03	0.07	-0.44
$r^2$	.60			
$\Delta r^2$	.59			

*Note.* \* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$ .

### 3.6 Overall Discussion of Study 1

Assessing the values that adolescents associate with desired goals is essential for promoting positive outcomes, as the values that are associated with behaviours can guide adolescents' own subsequent behaviour (Allen et al., 1989; Gerrits et al., 2009). Thus, the values associated with desired goals are an essential part of adaptive self-regulatory behaviour (Miller & Byrnes, 2001). The current thesis is aimed at assessing the role of a number of self-regulatory factors in positive development, including prosocial values. As no research has previously examined adolescents' prosocial values and their subsequent role in positive development, a series of studies were conducted.

Using the framework outlined by the Prototype/Willingness model (Gerrard & Gibbons, 1995), Study 1 sought to assess adolescents' social-images, or behavioural prototypes, of prosocial behaviours, and their impact on willingness to engage in prosocial behaviour. Willingness to engage in a behaviour has been found to be more sensitive than behavioural intentions in predicting actual behaviour (Gibbons & Gerrard, 1995). Based on previous research, it was hypothesised that greater endorsement of positive characteristics of prosocial behaviour would predict greater willingness to engage in prosocial behaviour. However, in order to systematically assess this hypothesis, a series of studies needed to be undertaken.

First, in order for social-images to have an impact on subsequent behaviour, a key assumption is that the mental image of the behaviour is vivid and salient. Study 1A assessed the vividness of a number of prosocial behaviours in a group of Irish adolescents. Results revealed that the most clear and salient prosocial behaviour images reported by Irish adolescents were "helping parents with chores" and "taking part in a youth group". These images were significantly more salient and clear than a number of other prosocial images (e.g., volunteering, being a class/group leader), and comparable to health-related images. Thus, these prosocial behaviours were used in subsequent studies to assess the characteristics (i.e., values) that adolescents attribute to prosocial behaviours. This study extends previous research on social images, highlighting that some prosocial behaviours were found to be more salient to adolescents than others. For instance, promoting environmental awareness was rated the least vivid prosocial behaviour, therefore unlikely to be associated with desirable characteristics and subsequently decreasing the likelihood of engagement in promoting environmental issues.

Study 1B qualitatively assessed the characteristics of the two most salient prosocial behaviours. A total of 12 characteristics were identified; 1) Smart, 2) Kind, 3) Sporty, 4) Friendly, 5) Respectful, 6) Attractive, 7) Popular, 8) Hardworking, 9) Caring, 10) Mature, 11) Independent, and 12) Boring. Some behaviour-specific trends emerged in the reporting of characteristics. For example, characteristics of "kind", "attractive" and "smart" were commonly used to describe the "helping parents with chores" image, while "popular", "sporty" and "friendly" are used to describe the "participation in a youth group" image. Furthermore, characteristics such as "hardworking", "mature", and "independent" emerged solely



for the helping image. Overall, these characteristics were considered relevant by adolescents when describing their peers who engage in prosocial behaviours. It is notable that unique characteristics of hardworking, sporty, friendly, and respectful, emerged as relevant to describing prosocial behaviour. This highlights the importance of assessing behaviour-specific characteristics.

Study 1C had two primary goals. First, it examined the characteristics identified as relevant to prosocial behaviour in order to explore the structure of adolescents' prosocial prototypes. A two-factor structure emerged following Exploratory Factor Analysis (EFA); a positive prototype factor (e.g., smart, friendly), and a negative prototype factor (e.g., immature, boring). Thus, adolescents' prosocial prototypes (i.e., social-image of prosocial behaviour) consisted of 12 characteristics, which materialised as two reliable prototype factors. The second goal of Study 1C was to examine whether the two factors of prosocial prototypes predicted perceived favourability of prosocial behaviour, perceived similarity to someone who engages in prosocial behaviour, and self-reported willingness to engage in prosocial behaviour. Using a series of linear regressions, the two prototype factors, positive prototype and negative prototype, were found to significantly predict favourability of and similarity to, prosocial behaviour. This is in line with previous research assessing the relationships between prototypes and health-related behaviours (Rivis & Sheeran, 2006; Rivis et al., 2006). Furthermore, separate linear regression analyses found that similarity to prosocial behaviour, but not favourability of prosocial behaviour, was a significant unique predictor of willingness to engage in prosocial behaviour. Taken together, these findings suggest that, while positive and negative image characteristics are related to motivational aspects of decision making, prototype similarity appears to be the most significant factor contributing directly to willingness to engage in prosocial behaviour. Thus, if a young person can identify as similar to a prosocial behaviour, they are more willing to perform the prosocial behaviour. These findings indicate that prototype perceptions may have significant implications for adolescent behaviour, as it suggests that the values associated with prototypes of prosocial behaviour affect motivational aspects of behaviour, which predict subsequent willingness to engage in prosocial behaviour. Further research using the prosocial prototype measure is conducted in Study 2 to clarify these relationships.

The current research using the Prototype/Willingness Model (Gibbons & Gerrard, 1995) was advanced in two important respects. First, findings indicated that prosocial prototype perceptions have significant associations with motivational aspects of prosocial behaviour (i.e., favourability and similarity), and greater perceived similarity predicts willingness to engage in prosocial behaviour. This consideration underlines the significance of prosocial images for adolescent behaviour, as it suggests that prosocial prototypes may affect prosocial behaviour through a social reaction route of decision-making (Gibbons & Gerrard, 1995). Specifically, adolescents' self-schemas, their cognitive framework for the knowledge the individual has about him- or herself, promote specific patterns of behaviour response when a particular prototype image is primed by their context (Piaget, 1985). For example, adolescents have been found to possess clear images of what people who drink alcohol are like, and know that if they are seen to drink alcohol, they will acquire the image, or aspects of the image, associated with drinking (Gerrard, Gibbons, Stock, Lune, & Cleveland, 2005). Thus, adolescents are aware that, although it may not be the reason for engaging in behaviour such as drinking alcohol, there are social consequences to engaging in a behaviour in terms of others' perceptions of them. Given that theorists have proposed that adolescence is a period of time during which people tend to be preoccupied with their social image (Erikson, 1950; Manning & Allen, 1987), adolescents may be particularly sensitive to the impact their behaviour has on their social images. Thus, the characteristics and values attributed to behaviour are important in guiding adolescent behaviour.

Second, although previous research has been primarily concerned with health-risk behaviours, the present studies illustrated the salience of prosocial imagery to adolescents, and the significant associations between prototype values and motivational aspects of behavioural engagement. Therefore, young people have clear images of positive behaviour and such images have an important role in explaining motivation to engage in prosocial behaviours among adolescents. In sum, the present research underlines the scope and importance of the prototype construct in explaining adolescents' positive development.

It is also important to consider the lack of reliable effects for prototype favourability predicting willingness to engage in prosocial behaviour. It is possible that when it comes to performing prosocial behaviours, liking the behaviour (i.e.,

perceiving the behaviour as favourable) is less important than identification (i.e., perceiving the behaviour as part of perceived role in family/school/community) in determining decisions. Adolescents may feel that prosocial behaviour such as helping their parents may not be intrinsically rewarding (i.e., not favourable), but is viewed as part of their role or identity in the family. Future research is needed to explore the effects of prosocial prototype favourability. For instance, experimental research could be used to manipulate the goals of prosocial behaviour to assess whether favourability or similarity predict prosocial behaviour in different ways across situations. For example, based on research by Lindenberg (2006), prosocial goals could be framed as normative (i.e., is prosocial behaviour appropriate?), for gain (i.e., is prosocial behaviour aimed at improving resources?), or aimed at hedonic goals (i.e., is prosocial behaviour aimed at feeling better?). Thus, the role of prototype favourability and similarity could be clarified under different prosocial goals.

**3.6.1 Limitations.** Several limitations were identified in Study 1 and warrant further discussion.

First, the prosocial images used were reasonably salient, but found not to be as salient as a number of health-behaviour images (e.g., exercising regularly). Further research should explore how positive health-related behaviours and prosocial behaviours differ in their salience to young people, and the potential impact on positive, healthy behaviour.

Second, although great care was taken to include adolescents who differed in age, gender, and socio-economic status, studies were conducted with convenience samples. The majority of adolescents in studies 1A and 1B were male, therefore, we cannot be certain whether a greater female sample would have rated different prosocial behaviours as most vivid, or created the same list of adjectives to describe prosocial behaviour. Subsequent gender differences were found for the positive prototype factor, with males rating positive characteristics higher than females. Thus, more male-orientated characteristics may have been included in the measure and subsequently endorsed more by male participants. Nonetheless, a number of adjectives created did overlap with adjectives from the original prototype measure that was created with a gender balanced sample (Gibbons & Gerrard, 1995). In the

current study, four unique characteristics were identified (e.g., hardworking, sporty). However, future research should examine gender differences in characteristics and attributions associated with prosocial behaviour.

Third, it is important to reflect on the initial chosen set of prosocial behaviours outlined in Study 1A. While a variety of behaviours were selected to represent prosocial behaviours that contributed to different settings (i.e., individual, family, community), it is likely that some behaviours were more relevant to some age groups than others. For instance, working part-time is more likely to be relevant to older Irish adolescents (Stack, McKecknie, & Hobbs, 2001). Similarly, the current study did not control for previous experience of the outlined behaviours. Further research using a quantitative measure should control for previous experience, while qualitative work should explore the behaviours and actions that adolescents perceive as positive within their own specific domains in order to increase the salience of the measured prosocial behaviours. From the perspective of adolescents, prosocial behaviour may be seen in a number of ways (e.g., “liking” or “sharing” a positive, or prosocial post on Facebook). Therefore, future qualitative work should assess what behaviours adolescents consider prosocial and antisocial.

**3.6.2 Conclusion.** While some research has assessed the role of prototypes in health-protective behaviours (e.g., condom use, exercise, eating breakfast; Blanton et al., 2001; Ravis et al., 2006), no previous research has assessed the role of adolescents’ prosocial images on willingness. The current findings illustrate the importance of prototype perceptions for adolescent behaviour.

As outline above, the present studies extend previous research in a number of ways. In particular, these studies illustrate the salience of prosocial imagery to adolescents. Furthermore, findings suggest that prototype perceptions have significant associations with motivational aspects of prosocial behaviour (i.e., favourability and similarity). Second, findings indicate that perceived similarity, but not perceived favourability, of prosocial behaviours predicts willingness to engage in prosocial behaviour. In sum, young people have clear images of positive behaviour and such images have an important role in explaining motivation to engage in prosocial behaviours. The present research underlines the scope and importance of the prototype construct in adolescent’s motivation to engage in specific prosocial

behaviour. Further research is needed to assess the relationship between prosocial prototypes and adolescents' general positive development. Thus, one of the aims of Study 2 is to assess whether prosocial prototypes predict positive youth development.

Consequently, Study 2 will use the prosocial prototype measure to ascertain whether the two-factor prosocial prototype measure is related to positive youth development. By using the prosocial prototype measure, we can assess the perceived values associated with specific prosocial behaviour (i.e., participating in a youth group), and examine whether these prosocial values are predictive of positive development in general. Thus, as Study 2 examines positive functioning in general, perceived similarity to, and favourability of, prosocial behaviours are not included as they refer to specific behaviours. As Study 1 has illustrated the role of prosocial prototypes in motivating engagement in behaviour, prosocial prototypes may subsequently influence adaptive developmental regulations (i.e., motivate individuals negotiating individual-context demands towards prosocial behaviours). This relationship is tested in Study 2B.

## **4. Chapter Four**

### **Study 2 Methodology**

#### **4.1 Chapter Overview**

The current chapter has two primary goals. First, this chapter aims to describe the process involved in the development of the student questionnaire used in the present study to measure individual factors hypothesised to be associated with positive youth development.

Second, this chapter will provide an outline of the design of the study, in addition to a description of the study participants, measures, and procedures used for data collection.

#### **4.2 Development of Questionnaires**

The individual questionnaire that was developed for this study assessed a number of emotional, motivational, and attitudinal factors hypothesised to be associated with adolescent self-regulation and positive development. Socio-demographic information was also assessed, using both the individual questionnaire and a short parental questionnaire.

The individual questionnaire assessed the following factors; SOC, prosocial values, resistance to peer influence, emotion regulation, future orientation, positive youth development (PYD), contribution, depression, and risky-behaviours. A number of factors were taken into consideration when selecting measures to operationalise each of these factors.

##### **4.2.1 Factors affecting the format and content of the questionnaires.**

Decisions regarding (a) the structure and format of the surveys used, and (b) the inclusion of measures and items were based on a number of key considerations. These considerations are outlined below.

***Psychometric Properties.*** The psychometric properties of scales, such as reliability and validity, were taken into account when selecting the most appropriate scale to assess each variable. Therefore, scales assessing the same variables were reviewed. The scale with the best psychometric properties was selected for inclusion in the questionnaire where appropriate.

***Developmental Appropriateness.*** The goal of this study was to recruit adolescents from a wide age-range (i.e., 12-18 years old). Thus, due consideration needed to be given to developing a questionnaire that was sensitive to the different levels of cognitive development among participants. This is to ensure that comprehension and response quality were not affected. In addition, in order to examine developmental differences in predictors of positive development across adolescence, measures needed to be suitable to administer to the full age range of 12-18 years old.

***Length of Instrument.*** A necessary consideration for the current research was how limitations in adolescents' cognitive ability, attention, and memory may affect the length of the questionnaire. The researcher's goal was to develop a questionnaire that assessed the relevant components of the proposed model, with a questionnaire of acceptable length that would not affect the quality and accuracy of participant's responses (i.e., that it would not induce boredom, fatigue, or acquiescence). Similar considerations were made in developing the parent and school principal questionnaires. Therefore, an important issue, for the adolescent, parent and school principal, was the length of time needed to complete the questionnaire.

***Cultural Appropriateness.*** The appropriateness of each scale for Irish adolescents was reviewed prior to selection. In addition, the pilot test was used to identify general suitability of the measures for administration to Irish adolescents, their parents and their schools.

***Reference Period.*** When constructing the questionnaire, an important consideration relates to the effect of the reference period on response quality. Questions about the present are easier to answer than questions about some time in the past (Knäuper, Belli, Hill, & Herzog, 1997). While the majority of scales selected asked participants about the present, some questions relating to previous behaviour used the reference period of the past 12-months. This was deemed necessary in order to portray an accurate reflection of adolescent behaviour, and avoid losing information on behaviour by constraining the reference period too much.

### **4.3 Materials/Measures**

A battery of measures was prepared for this study in order to assess the range of predictors of positive adolescent development. Scales were selected to represent emotional, motivational and attitudinal factors that influence adolescent self-regulation outlined in Figure 2.7. Socio-demographic information (e.g., mother's education) was also obtained from a parental questionnaire. The content of each measure are described below.

**4.3.1 Individual variables.** The measures included in the individual questionnaires are outlined below.

***Intentional Self-Regulation.*** The Selection, Optimisation, and Compensation (SOC) questionnaire (Freund & Baltes, 2002) was used to measure cognitive and behavioural aspects of intentional self-regulation. Four subscales of intentional self-regulation are measured, elective-selection, optimisation, compensation, and loss-based selection. The Elective Selection (S) subscale represents the development of preferences or goals, the construction of a goal hierarchy, and the commitment to a set of goals (e.g. "When I decide upon a goal, I stick to it"). The Optimization (O) subscale refers to acquisition and investment of goal-relevant means for achieving one's goal (e.g. "I keep trying as many different possibilities as are necessary to succeeding at my goal"). The Compensation (C) subscale refers to the use of alternative means for maintaining a given level of functioning when specific goal-relevant means are not available anymore (e.g. "When things don't work the way they used to, I look for other ways to achieve them"). The Loss-Based (LBS) subscale describes how an individual reacts to a decline of resources or previously available means, by reconstructing a particular goal or selecting a different goal (e.g., When I can't do something as well as I used to, I think about what exactly is important to me; Freund & Bales, 2002).

The items in the SOC measure are forced-choice format, and each item consists of two statements, one describing behaviour reflecting S, O, C or LBS, and the other describing a non-SOC related strategy. The SOC asks participants to decide which of the statements is more similar to how they would behave. For example, an item from the Elective Selection subscale is "I concentrate all my energy on few things [Person A] OR I divide my energy among many things [Person B]." Responses that are consistent with the use of a SOC related strategy are totalled,



which then provides a score for each individual on each subscale (Selection, Optimisation, Compensation and Loss-based selection). Higher scores on each subscale indicate higher levels of self-regulatory skills.

The original SOC measure was created in German for use with adult populations included 48-items (i.e., 12-items on each subscale; Baltes et al., 1990). A shorter version of this measure was developed that evinced equivalent psychometric properties (Cronbach's alpha ranging from .68-.75), therefore a 24-item (6-items per subscale) measure was used (Freund & Baltes, 2002). However, previous research using the SOC model in adolescents have used a one-factor nine-item version (Gestsdóttir & Lerner, 2009), a three-factor 18-item version (Gestsdóttir et al., 2009), and a four-factor 24-item version (Gestsdóttir et al., 2010) of the SOC measure. Given the inconsistency of the measure used with adolescents, the current research will assess the structure of the SOC model in Irish adolescents.

Previous research using the SOC model in adolescents aged 10-15 years has shown low reliability for subscale scores (Cronbach's  $\alpha$  range; Selection = .21-.35; Optimisation = .21-.39; Compensation = .10-.29; Gestsdóttir et al., 2007; Gestsdóttir et al., 2009), and low-moderate reliability for composite (overall scale) scores for both a one-factor nine-item SOC score (e.g., Cronbach's  $\alpha$  range = .62 - .65; Gestsdóttir et al., 2009) and an 18-item composite score of SOC (e.g., Cronbach's  $\alpha$  range = .48 - .52; Gestsdóttir et al., 2009).

However, it has recently come to light that a number of limitations are overlooked when using Cronbach's alpha with dichotomous data (Napolitanoa, Kristina, & Muellera, 2013). First, computing Cronbach's alpha involves computations using raw covariances that assume a binomial distribution for dichotomous data. However, when handling dichotomous data such as the SOC items, which represent normally-distributed item true scores, it is more appropriate to compute reliability using a tetrachoric correlation matrix. Second, the calculations are based on essential tau-equivalence (assumption that all items are equally good representations of a scale's underlying latent construct). This is rarely tenable in the social sciences, therefore, Cronbach's alpha results in a lower-bound estimate of reliability. An alternative approach to measuring the reliability of dichotomous data is to compute the composite reliability ( $\omega$ ; McDonald, 1999), which is calculated

using factor analysis, and is proposed as superior to Cronbach's alpha (Napolitano et al., 2013). The composite reliability for the nine-item SOC measure was found to be acceptable ( $\omega$  range = .76 - .83) for adolescents aged 10-17 years (Napolitano et al., 2013). In the current study, the composite reliability for an 11-item SOC measure was similar ( $\omega$  = .76).

**Prosocial Prototypes.** The measure of prosocial prototypes outlined in Study 1C was used in the current study to assess values associated with prosocial behaviour. See Section 3.5.3 for a full description of the measure of prosocial prototypes. The results of Study 1C illustrated that the prosocial prototype factors evinced good reliability (Cronbach's  $\alpha$  = .81 [positive prototype], .76 [negative prototype]). Similarly, internal reliability in Study 2 for both the positive prototype ( $\alpha$  = .82, 95% CI = .80 – .84) and the negative prototype factors ( $\alpha$  = .80, 95% CI = .77 – .82) were good.

**Resistance to Peer Influence.** The measure of Resistance to peer influence (Steinberg & Monahan, 2007) was used to measure the degree to which adolescents act autonomously in their interactions with their peers. This measure assesses the peer influence construct in general, neutral terms, rather than using specific reference to antisocial peer influence.

The measure utilises a forced-choice response procedure developed by Harter (1982), where respondents read two conflicting statements, and asks them to choose the statement that is the best descriptor of their behaviour (*sample item: "Some people go along with their friends just to keep their friends happy" BUT "Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy"*). After indicating the best descriptor, the respondent is then asked whether the description is "Really True" or "Sort of True." Responses are then coded on a 4-point scale, ranging from "really true" for one descriptor to "really true" for the other descriptor. Participants are presented with a series of 10 pairs of statements, each examining different dimensions of possible influence (e.g., going along with friends, fitting in with friends, and knowingly doing something wrong). Higher scores indicate less susceptibility to peer influence.

Internal reliability of the RPI measure has been reported as good (i.e., > .70) in diverse adolescent samples (e.g., serious juvenile offenders, community sample;

Monahan et al., 2009; Steinberg & Monahan, 2007). The uni-dimensional nature of the measure has also been supported using confirmatory factor analysis (e.g., CFI = .94, RMSEA = .04; Monahan et al., 2009). Lower scores on the RPI measure (i.e., more susceptibility to peer influence) are correlated with higher scores of impulsivity and risk-taking, and less mature patterns of functional connectivity between brain regions responsible for inhibitory control and regions active in social processing of social information using functional magnetic resonance imaging (fMRI; Steinberg & Monahan, 2007). Thus, the validity of the measure is supported.

***Emotion Regulation.*** The regulation of emotions was measured using the Regulation of Emotions Questionnaire (REQ; Phillips & Power, 2007). This measure was created specifically for adolescents, using young people from diverse socioeconomic groups living in the UK aged 12-19 years old.

Emotion regulation strategies are divided along a functional/dysfunctional and internal/external framework. Four subscales are created; internal-dysfunctional (5-items), internal-functional (5-items), external-dysfunctional (5-items), and external-functional (6-items). Items are scored on a five-point likert scale indicating frequency of strategy use ranging from 1 (“never”) to 5 (“always”), with higher scores indicating higher use to internal/external functional/dysfunctional regulation strategies. Internal reliability for each subscale has been reported as good; internal functional (e.g., “I put the situation into perspective”;  $\alpha = .76$ ), external functional (e.g., “I ask others for advice”;  $\alpha = .79$ ), internal dysfunctional (e.g., “I harm or punish myself in some way”;  $\alpha = .61$ ) and external dysfunctional (e.g., “I bully other people”;  $\alpha = .65$ ; Phillips & Power, 2007). The internal reliability of the REQ subscales in the current sample ranged from adequate to good; .73 (95% CI = .70 – .76; External-Dysfunctional), .77 (95% CI = .74 – .80; External-Functional), .53 (95% CI = .47 – .59; Internal-Dysfunctional), and .74 (95% CI = .71 – .77; Internal-Functional).

The validity of the REQ subscales were assessed by investigating associations with behavioural and emotional problems, psychosomatic health problems, and quality of life (Phillips & Power, 2007). For example, both internal- and external-dysfunctional subscales were significantly positively correlated with subscales of emotional symptoms, conduct problems, hyperactivity, peer problems

and total difficulties as measured by the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). In addition, quality of life (QOL) subscales were significantly positively related to functional emotion regulation strategies (i.e., internal- and external-functional; Phillips & Power, 2007). Therefore, the validity of the REQ measure was supported.

***Future Orientation.*** Future orientation was measured using the Future Orientation Inventory (FOI; Cauffman & Woolard, 1999). Items for the FOI measure are drawn from the Life Orientation Task (Scheier & Carver, 1985), the Zimbardo Time Perspective Scale (Zimbardo & Boyd, 1999); and the Consideration of Future Consequences Scale (Strathman, Gleicher, Boninger, & Edwards, 1994). These multiple scales assess multiple components of the future orientation construct, for example, time perspective (e.g., “I will give up my happiness now so that I can get what I want in the future”), behavioural (e.g., “I make lists of things to do”), and cognitive components (e.g., “I usually think about the consequences before I do something”). A total of 8-items (and 7 filter items) are used. The FOI asks participants to indicate on a four-point likert scale the degree to which each statement reflects how they usually act, on a scale of 1 (“Never true”) to 4 (“Always true”). A mean future orientation score is calculated, with higher scores indicating a greater degree of future consideration and planning.

The internal reliability of the FOI measure has been reported in a sample of adolescents aged 14-17 years ( $\alpha = .68$ ; Monahan et al., 2009). In addition, the uni-dimensional factor was tested and found to be an excellent fit (CFI = .97, RMSEA = .03). The validity of the FOI is supported by significant positive correlations with measures of consideration of others, suppression of aggression, impulse control, and significant negative correlations with antisocial behaviour (Monahan et al., 2009). The reliability of the FOI for the current study is reported in Table 5.3.

***Positive Youth Development.*** The Positive Youth Development “Five Cs” measure for grade 8-12 (approximately 13-17 years old; Lerner et al., 2005; Phelps et al., 2009) was used to assess PYD. This self-report measure consisted of a total of 15 subscales which serve as indicators of each of the Five Cs.

For *Competence*, subscales of the Self-Perception Profile for Children (SPPC; Harter, 1982, 1988) were used to represent academic, social and athletic

competence (6 items per subscale), in addition to a single-item measuring school grades. A structured alternative response format (Harter, 1982) was used to assess perceived competence in each domain (excluding grades). Participants were asked to choose between two types of teenagers. Once they selected which person they are most like, they were asked to decide if it is “*really true for me*” or “*sort of true for me*.” For example, an academic competence item was “Some teenagers feel that they are pretty intelligent, BUT Other teenagers question if they are intelligent”. Items were counterbalanced, with each item scored from 1 to 4, with four reflecting higher perceived competence. Academic, social and athletic subscales previously illustrated good reliability, ranging from .76 to .86 for Grades 8-10 (Bowers et al., 2010; approximately 14-16 years old). The reliability of subscales in the current study is shown in Table 5.3.

*Confidence* was defined by a composite of two subscales: positive identity and self-worth (6 items each). The positive identity items were derived from the Profiles of Student Life-Attitudes and Behaviors Survey (PSL-AB; Benson, Leffert, Scales, & Blyth, 1998), with a response format for items (e.g., “All in all, I am glad I am me”) ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Self-worth was assessed using the subscale from the SPPC (Harter, 1982). A structured alternative response format was used (e.g., “Some teenagers like the kind of person they are BUT Other teenagers often wish they were someone else”). Each self-worth item was scored from 1 to 4, with higher scores on both subscales reflecting higher perceived confidence. Cronbach’s alphas for the positive identity and self-worth subscales in Grades 8-10 ranged from .74 - .88 in previous research (Bowers et al., 2010).

*Connection* consisted of three subscales of the PSL-AB (Benson et al., 1998) that measured connection to family (5 items), school (7 items), and community (5 items), and a subscale of the Teen Assessment Project Survey Question Bank (TAP; Small & Rogers, 1995) to assess peer connection (4 items). The majority of items for the family (e.g., “I get along with my parents”), school (e.g., “I care about the school I go to”) and community (e.g., “In my neighbourhood, there are lots of people who care about me”) subscales used a likert response format ranging from 1 = *strongly disagree* to 5 = *strongly agree*. A single item measuring connection to family (“If you had an important concern about drugs, alcohol, sex, or some other

serious issue, would you talk to your parent(s) about it?") used a likert format with responses ranging from 1 = *no* to 5 = *yes*. The items measuring connection to peers (e.g., "I trust my friends") ranged from 1 = *never true* to 5 = *always true*. Previous research showed good internal reliability for the connection subscales for Grades 8-10, ranging from .82 - .92 (Bowers et al., 2010).

The factor *Character* was defined by three subscales of the PSL-AB (Benson et al., 1998) that assessed social conscience (6 items), valuing of diversity (4 items) and personal values (5 items). A further subscale of the SPPC (Harter, 1982) measured behavioural conduct (6 items). For the subscales of personal values (e.g., "Telling the truth, even when it's not easy") and social conscience (e.g., "Helping other people"), participants are asked to rate how important each item is in their lives, with response formats ranging from 1 = *not important* to 5 = *extremely important*. One of the items used to measure valuing of diversity also uses this response format. The remaining three valuing of diversity items ask participants to think about the people who know them well and how they think they would rate them on each of the items (e.g., "Knowing a lot about people of other races"), using a response format ranging from 1 = *strongly disagree* to 4 = *strongly agree*. The behavioural conduct subscale (e.g., "Some teenagers do things they know they shouldn't BUT Other teenagers hardly ever do things they know they shouldn't do") was measured by using the Harter (1982) structured alternative response format. Bowers and colleagues (2010) reported adequate to good reliability for all subscales, ranging from .59 - .89.

The fifth factor *Caring* comprises of five modified items from the Eisenberg Sympathy Scale (ESS; Eisenberg et al. 1996) and four items adapted from the Empathic Concern Subscale of the Interpersonal Reactivity Index (IRI; Davis, 1983). The response format for these items (e.g., "When I see another person who is hurt or upset, I feel sorry for them") ranged from 1 = *not at all like me* to 5 = *very much like me*. High scores indicate higher levels of sympathy. In line with previous research (e.g., Phelps et al., 2009), individual items were randomly combined to form parcels

in order to enhance reliability<sup>10</sup>. For the nine Caring items, the average of three sets of three items form parcels 1, 2, and 3, respectively. Previous Cronbach's alphas ranged from .83 - .85 (Bowers et al., 2010). All subscale item responses are rescaled to a 0-12 point scale. Further details on validity of the PYD measure are outlined in Chapter 5.

**Contribution.** Contribution was measured using two equally weighted subscales of ideology and actions derived by Lerner and colleagues (2005). The ideology subscale (6 items) was obtained from the Teen Assessment Project Survey Question Bank (TAP; Small & Rogers, 1995) and two items created by Lerner et al., (2005). This subscale assessed the importance of contribution to the individual's identity and future self (e.g., "I often think about doing things so that people in the future can have things better"). The items from TAP use a likert response scale ranging from 1 = *strongly agree* to 5 = *strongly disagree*. The action subscale assessed leadership, service and helping. Leadership was measured with one item from the PSL-AB (Benson et al., 1998), "During the last 12 months, how many times have you been a leader in a group or organization?" A likert response format was used, ranging from 1 = *never* to 5 = *five or more times*. The second subset, called service, was obtained by adding the response of three items created by Lerner et al., (2005). For each item, participants are asked to indicate whether participation in a particular activity applied to them (e.g., "volunteer work"). Answers were dichotomised as participated/did not participate, and summed to make an overall service score. The third subset, helping, was a measure of the average of two items from the PSL-AB (Benson et al., 1998) in which participants responded about the average amount of time they spend doing certain activities during an average week (e.g., "Helping friends or neighbours."). The response choices range from 0 = *never* to 5 = *very often*. The composite contribution scores were rescaled from 0 – 100,

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<sup>10</sup> Parcelling is a measurement practice that is commonly used in multivariate approaches to psychometrics, and in particular with latent-variable analysis (e.g., SEM). Compared with item-level data, models using parcelled data is more parsimonious, less likely to have correlated residuals or dual loadings, and has a reduced level of various sources of sampling error (i.e., distributional violations, communality; MacCallum et al., 1999). A more detailed discussion of parcelling is outlined in Chapter 6 (Section 6.4.3).

with higher scores illustrating greater levels of contribution. Internal reliability for grades 7-12 have been good, ranging from .75 - .81 (Geldhof et al., 2013).

**Depression.** Depression was measured by the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D measure assesses four aspects of depression; depressed affect (e.g., “I felt I could not shake off the blues even with the help from my family or friends”), somatic complaints (e.g., “My sleep was restless”), positive affect (e.g., “I was happy” [reverse-scored]), and interpersonal problems (e.g., “People were unfriendly”). Using a likert response format ranging from 0 = *rarely or none of the time (less than 1 day)* to 3 = *most or all of the time (5–7 days)*, participants report how often they felt a particular way during the past week. The CES-D measure has been used widely with adolescent populations with good internal reliability across studies (e.g., Garrison, Addy, Jackson, McKeown, & Waller, 1991; Garber et al., 2009; Jelicic et al., 2007; Phelps et al., 2009; Roberts, Andrews, Lewinsohn, & Hops, 1990). Item scores are totalled to provide an overall score of depression, with higher scores indicating higher levels of depressive symptomology.

**Risk-Taking.** Risk-taking was measured using self-report scales of substance use and delinquency derived from the PSL-AB and the Monitoring the Future (2000) questionnaires. Four items were used to measure substance use or abuse. Participants were asked to indicate during the last 12 months whether they had done any of the following (e.g., smoking, using illegal drugs). The questions use a likert response format ranging from 1 = *never* to 5 = *regularly*. Four items were also used to measure delinquency. Participants were asked how many times during the last 12 months they have engaged in particular activities (e.g., “How many times have you hit or beat up someone?”). A likert response format was used, ranging from 1 = *never* to 5 = *five or more times*. All items were rescaled 0 – 5 and summed to form a composite measure of risk behaviours, with higher scores indicating higher levels of risky-behaviours.

**Demographic variables.** In order to reduce participant burden and obtain demographic information, a parental questionnaire was used. First, the background and ethnicity of the individual was assessed using two questions. The initial question asked the parent/guardian “were you born in Ireland?” Responses were



assessed using a forced-choice “yes” or “no” format. Respondents who indicated “no” were asked to indicate what country they were born (see Q1 Appendix G). In addition, race/ethnicity was assessed, with participants asked to indicate their race (i.e., “white”, “mixed”, “Asian”, “Black”, “Chinese”, “other”, or “prefer not to answer”). In line with previous research, socio-economic status was assessed by using the proxy of maternal education level (e.g., Dooley & Fitzgerald, 2012). This was categorised into six categories; Junior Certificate<sup>11</sup> or less, Leaving Certificate<sup>12</sup>, sub-degree (e.g., diploma), primary degree or third level, professional qualification, or “Other”.

**Contextual variables.** Furthermore, in order to obtain more contextual information, three items were used to assess the context of the adolescent. First, perceived safety was assessed using a single-item question (“how safe do you feel your child is travelling to facilities in your community?”). This was rated on a five-point likert scale, ranging from 1 = *unsafe* to 5 = *very safe*. A second item assessed the number of resources that were available to the adolescent in the community (“what kinds of facilities are available to your child in the local area?”). A list of resources (e.g., youth group, internet at home, etc) was provided, with parents asked to indicate the presence of a resource in their home or community using a forced-choice method (i.e., tick-box; see Appendix G). The number of resources indicated as present were summed and totalled to provide an indicator of resources available to the adolescent in their context. Finally, the most frequent mode of transport to facilities was assessed using a rank-order format. Participants were asked to rank from 1 (most frequent) to 5 (least frequent), the mode of transport used to travel to local facilities. Response options included “walking/cycling”, “lift with parent/family member”, “lift with parent of friend”, “public transport”, and “other”. Demographic and contextual information are presented in Table 4.1.

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<sup>11</sup> The Junior Certificate is a State exam taken at the end of 3 years in Post-Primary school. Students are usually 14-15 years of age at the time of examination. The Junior Certificate is a requirement for eligibility for the Leaving Certificate Exam.

<sup>12</sup> The Leaving Certificate is a State exam taken at the end of a two-year education programme and is the equivalent of the end of High School exams.

## 4.4 Pilot Study

The primary aim of the pilot study was to assess the ability of a wide range of adolescents to read, comprehend, and respond to the questions and items of the student questionnaire. In addition, the parental questionnaire was distributed in order to obtain information on any potential problems.

**4.4.1 Participants.** For the purpose of the pilot study, it was decided to recruit adolescents from both junior classes (i.e., 1st and 2nd Year Post-Primary), and senior classes (i.e., 5th Year Post-Primary). This represented both younger (11-15 years old) and older (16-19 years old) adolescent age groups. A total of 59 students (28 male, 31 female) attending one Post-Primary school in the North-West of Ireland took part in the pilot. Participants' age ranged from 12 years 10 months to 18 years 8 months ( $M = 14.78$ ,  $SD = 1.44$ ).

**4.4.2 Procedure.** The procedure for Study 2 differed slightly from that used in Study 1. Therefore, the procedure is outlined below.

Ethical approval was obtained by the Research Ethics Committee at the National University of Ireland, Galway. The principal of the school was initially contacted by letter which detailed the protocol involved in the research study. This letter was then followed up by a telephone call to the school a week later. Following approval from the principal of the school, it was agreed that the principal ask a teacher (religion or guidance counsellor) to oversee the research procedure in the school. After meeting the teacher to discuss the research, research packs containing letters of invitation to take part in the research, consent forms and information sheets for students and parents, were distributed to the selected classes. Participants were asked to bring the letters of invitation (see Appendix G), information sheets (see Appendix H) and consent forms (Appendix I [including parental questionnaire, see Appendix J]) to their parent(s)/guardian(s), and return to the assigned teacher within a week. Participants whose parents wanted their child to take part in the research were asked to return the signed consent form and parent questionnaire to the teacher. The assigned teacher went around to each class within a week to remind participants to bring the consent forms home.

All adolescents in a randomly selected 1<sup>st</sup> Year class ( $n = 28$ ), 2<sup>nd</sup> year class ( $n = 18$ ), and 5<sup>th</sup> year class ( $n = 24$ ), were invited to participate in the pilot phase and were provided with research packs. A total of 62 participants agreed to take part and returned consent forms (1<sup>st</sup> year consent response rate = 92.86% [92.86% returned parental questionnaire]; 2<sup>nd</sup> Year consent response rate = 83.33% [55.56% returned parental questionnaire]; 5<sup>th</sup> Year consent response rate = 75% [50% returned parental questionnaire]).

Two weeks later, the questionnaire battery was distributed to students. On the day of survey completion, three students who had returned consent were absent. Therefore, a final total of 59 adolescents participated in the pilot study. All students were informed that they would fill out a survey aimed at understanding their thoughts and feelings on life as a teenager. Participants were instructed to go through the survey booklets at their own pace. All students were encouraged to ask the researcher any questions throughout the testing period. The survey testing period consisted of a 40 minute class. Students were situated in their school computer room for the duration of the study.

The questionnaire battery, which was presented to participants as an A4 booklet, consisted of a demographic questionnaire, the PYD scale, the SOC measure, resistance to peer influence, emotion regulation, contribution, depression, risk-taking and future orientation. The information sheet and student assent form were also included. On completion, consent forms were collected and participants were instructed to seal the questionnaire battery in the provided envelope.

Upon finishing the survey booklet, all participants were asked to discuss the questionnaire, including aspects that were good, not so good, and identifying areas of improvement. A class discussion took approximately 5-10 minutes, where the researcher facilitated discussion. When new suggestions and ideas appeared exhausted, students were all thanked for their feedback on the project.

**4.4.3 Results.** The results of the pilot test were primarily focused on how age-appropriate and suitable the survey and computer task were for the group of participants. In addition, feedback was sought on the parental questionnaires.

A number of issues were noted by the researcher. Regarding the individual questionnaire, overall feedback indicated the questionnaire was clear and understood. Some participants sought clarification on the word “*perspective*” (i.e., I put the situation into perspective; Future Orientation Inventory item). Participants could not suggest a suitable alternative to this word, therefore, it was retained with an example included in future iterations (e.g., I put the situation into perspective [i.e., “I look at the ‘bigger’ picture”]).

A number of issues were raised by participants in relation to the positive youth development (PYD) measure. Participants expressed the view that a number of items on the scale were very similar. In addition, some concern was raised over the length of the PYD measure (i.e., 78 items). Specifically, the 25 PYD items assessed using the Harter (1982) forced-choice format were identified as burdensome (e.g., “Some teenagers feel that they are just as smart as others their age BUT Other teenagers aren’t so sure and wonder if they are as smart”). However, feedback did not reveal similar feelings when completing the 10 items of the resistance to peer influence (RPI) measure that used the same answer format. Therefore, we surmised that participants were concerned by the number of items on the PYD measure (items 1-78). The questionnaire was therefore modified to extract the 25 items of the PYD measure that used the Harter forced-choice format and present it as a separate section of the questionnaire. We presented this section after the RPI scale, thus keeping similar response formats together. The remaining 53 items of the PYD measure remained as a separate section (see Appendix K for questionnaire). No other issues were identified with the individual questionnaire.

***Participant Questionnaire.*** The final version of the individual questionnaire can be seen in Appendix K. The questionnaire contained a number of sections and items, namely SOC (24 items), resistance to peer influence (10 items), positive youth development (Harter-subscales; 30 items), positive youth development (53 items), contribution (13 items), risky-behaviours (11 items), emotion regulation (21 items), depression (20 items), future orientation (15 items), and prosocial prototypes (24 items).

#### **4.5 Research Design for Study 2**

Study 2 is aimed at testing the relationships between prosocial values, peer influence, future orientation, emotion regulation and goal-directed behaviours (i.e., SOC) influencing positive youth development. However, before testing the relationship between prosocial values and PYD, it is necessary to first assess the psychometric properties of the PYD measure (Study 2A).

Using a cross-sectional design, Study 2A (Chapter 5) conducted a confirmatory factor analysis (CFA) of the hypothesised *a priori* factor structure of the Five Cs Model of positive youth development (PYD) in Irish adolescents. Furthermore, Study 2A assessed the psychometric properties of the PYD model in Irish adolescents, and examined whether the model performed consistently across gender, and younger- and older-adolescent age groups.

Study 2B (Chapter 6) also used a cross-sectional design to test the hypothesised Adolescent Self-Regulation Model; relationships between the individual predictor variables (i.e., prosocial images, emotion regulation, peer influence, and future orientation), SOC, and positive (i.e., PYD and contribution) and negative (i.e., risk and depression) indices of development.

Finally Study 2C employed a short-term longitudinal design (Chapter 7). By repeating the measures of positive and negative indices of development 12-months later, Study 2C could assess the predictive ability of the Adolescent Self-Regulation Model on outcomes 12-months later. Furthermore, longitudinal data allowed the testing of the stability of PYD over 12-months at a group-level and an individual-level, and also to examine the time 1 characteristics associated with group- and individual-level change in PYD over 12-months.

The aim was to recruit participants from junior classes (i.e., 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year) and senior classes (i.e., 4<sup>th</sup> and 5<sup>th</sup> year). Details on participants, recruitment procedures, and methodology utilised in the primary study are outlined below.

**4.5.1 Sample Size Calculations for SEM.** Prior to participant recruitment, a review of recommended criteria was conducted in order to determine an appropriate sample size for Structural Equation Modelling (SEM). Previous research has indicated that sample sizes of 250-500 are used in many SEM analyses (Schumacker & Lomax, 2004). In addition, Tabachnick and Fidell (2007) suggest that

approximately 200 participants are adequate for small to medium models. However, improper and (often) spurious model solutions and non-convergence have been found when sample sizes are small (Anderson & Gerbing, 1991). Further, Comrey and Lee (2013) suggest that researchers obtain at least 500 observations. Thus, a minimum sample of at least 500 participants was sought for the current study, with approximately 250 adolescents in the younger (11 – 15 years old) and older (16 – 19 years old) age groups.

## 4.6 Participants

**4.6.1 Inclusion and Exclusion Criteria.** Criteria for inclusion in the present study were that adolescents were in Post-Primary school from 1<sup>st</sup> – 5<sup>th</sup> year, and parental consent was obtained to participate in the study. Criteria for exclusion from the study were adolescents identified as not having an English language competency level needed to complete the survey independently. No participants were identified that met this exclusion criterion. In addition, 6<sup>th</sup> year students (final year post-primary school students) were excluded from the current study, as they would not be available for follow-up at time 2 data collection 12-months later due to finishing school ( $n = 16$ ).

**4.6.2 Recruitment.** All participants were recruited through their schools. In post-primary schools, younger participants were recruited from 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year groups, while older adolescents were recruited from senior classes (i.e., 4<sup>th</sup> and 5<sup>th</sup> year). Based on the inclusion and exclusion criteria, a total sample of 672 participants aged eleven to nineteen ( $M$  age = 14.81,  $SD = 1.64$ , males = 57.6%) participated in the research. See Table 4.1 for breakdown of participant characteristics by gender, age group, and class, and Table 4.2 and Table 4.3 for demographic and contextual information.

Table 4.1

*Characteristics of sample at time 1 by gender, age group and class (N = 672)*

Variable	Number	Males	Females	Age-Range	Mean Age	SD
Age	668	387	284	11.77 – 19.45	15.32	1.63
<b>Class Group</b>						
1 <sup>st</sup> year	146	83	62	11.77 - 14.71	13.15	0.58
2 <sup>nd</sup> year	130	66	64	12.98 - 15.71	14.31	0.60
3 <sup>rd</sup> year	86	41	45	14.26 – 16.20	15.13	0.43
4 <sup>th</sup> year	110	68	42	15.10 – 17.06	16.18	0.44
5 <sup>th</sup> year	200	129	71	16.33 – 19.45	16.96	0.67
<b>Age Group</b>						
Early Adolescence	408	224	184	11.77 – 15.99	14.24	1.05
Late Adolescence	260	161	99	16.00 – 19.45	17.01	0.61

*Note.* Four participants did not report their age. One participant did not report their gender.

Table 4.2

*Demographic characteristics of sample at time 1 (N = 672)*

<b>Variable</b>	<b>Number</b>	<b>Percentage</b>
<b>Ethnicity</b>		
White	385	57.3
Mixed	3	0.4
Asian	3	0.4
Black	1	0.1
Chinese	1	0.1
Other	1	0.1
Prefer not to answer	0	0
Missing	278	41.4
<b>Parent Education</b>		
Junior certificate or less	66	9.8
Leaving Certificate	106	15.8
Diploma	85	12.6
Postgraduate	59	8.8
Professional	68	10.1
Other	2	0.3
Missing	286	42.6



Table 4.3

*Contextual characteristics of sample at time 1*

Variable	M (SD)	Range	Number (%) of respondents	Number (%) of non-respondents
<b>Number of Facilities</b>				
Total number of facilities	6.94 (3.37)	1-16	389 (57.9)	283 (42.1)
Internet access – home			352 (90.7)	36 (9.3)
Internet access - in community			132 (34.0)	256 (66.0)
Youth groups			235 (60.6)	153 (39.4)
Gym/Swim			253 (65.2)	135 (34.8)
Football			352 (90.7)	36 (9.3)
Hurling			183 (47.2)	205 (52.8)
Soccer			266 (68.6)	122 (31.4)
Dance			159 (41.0)	229 (59.0)
Theatre			124 (32.0)	264 (68.0)
Martial Arts			128 (33.0)	260 (67.0)
Other (e.g., Rugby)			101 (25.8)	288 (74.2)

## 4.7 Procedure

**4.7.1 Recruiting Schools.** Ethical approval was obtained by the Research Ethics Committee at the National University of Ireland, Galway. Schools were selected from a list of post-primary schools provided by the Department of Education and Science website. A cluster-sampling (“two-stage sampling”) technique was utilised to select schools. In the first stage, schools were selected within the Western Region Health Service Executive Area. In the second stage of sampling, schools were randomly selected. Twenty schools were contacted by letter which detailed the protocol involved in the research study. Eleven secondary schools (55% school consent rate) in Mid- and North-Western Republic of Ireland agreed to take part in the research (8 mixed-sex schools [2 urban, 5 rural, and 1 rural-disadvantaged]; 2 single-sex boys schools [1 urban and 1 urban-disadvantaged]; and 1 single-sex girls school [rural]). Analyses revealed that the average percentage of participants recruited from any one school was 55.31% ( $SD = 16.69$ ). In total, 18.3% of respondents were from designated disadvantaged schools.

The recruitment of schools was outlined above (see Section 4.4.2). The breakdown of the distribution of consent forms and return rate to each school at time 1 is outlined in Table 4.4.

Table 4.4

*Distribution and return rate of consent forms at time 1*

School	Consent forms distributed	Number (%) returned
A	350	218 (62.29)
B	180	96 (53.33)
C	45	16 (36.56)
D	120	69 (57.50)
E	45	30 (66.67)
F	350	58 (16.57)
G	50	28 (56.00)
H	150	73 (48.67)
I	124	92 (74.19)
J	30	20 (66.67)
K	40	28 (70.00)

The parents of 1484 adolescents were invited to consent to the participation of their child in the research. A total of 49.06% ( $n = 728$ ) of parents provided consent for their child to take part in the research, while the remainder did not respond. Furthermore, of the 728 parents who returned parental consent forms, 44.78% ( $n = 326$ ) of parents returned the parental questionnaires. A number of students were absent on the day of testing, therefore the final number of participants was 672.

**4.7.2 Distribution of Questionnaires and Data Collection.** Approximately two weeks after distributing information packs to students, a time and date was established for data collection in the school. The assigned teacher introduced the researcher to the classroom of students who had returned consent. A number of key points were emphasised to the class; 1) confidentiality of information; 2) informing

participants they could withdraw from the study at any time; 3) telling participants how long the questionnaire would take; 4) pointing out that participants could skip questions if they chose not to answer; and 5) informing participants that there was no right or wrong answers.

After this introduction, a participant information sheet and student assent forms were distributed to participants to ensure informed consent. The questionnaire battery, which was presented to participants as an A4 or A5 booklet, was then distributed. After reading the introduction section of the questionnaire to all participants, students were instructed to begin the questionnaire.

**4.7.3 Completion of Questionnaires.** Participants completed the questionnaires in a school classroom during regular class times. For older adolescents (4<sup>th</sup> and 5<sup>th</sup> year), introducing and completing the questionnaire usually took about 30-35 minutes, while younger adolescents (i.e., 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year) took about 35-45 minutes to complete.

On completion of the questionnaire, participants were asked to check their questionnaires to ensure that each page was filled in. Consent forms were then collected and participants were instructed to seal the questionnaire battery in the envelope provided. Participants were thanked for their involvement in the study and encouraged to ask questions about the research, or the general field of Psychology.

## **4.8 Statistical Analysis**

Quantitative data from the questionnaires were analysed using PASW Statistics 20 (IBM, 2011), AMOS 20 (Arbuckle, 2011), and MPlus 7.1 (Muthén & Muthén, 2011). The statistical analyses outlined for each chapter is detailed below.

**4.8.1 Statistical Analysis for Chapter 5 (Study 2A).** The primary goal of this chapter is to assess the factor structure of the Five Cs Model of Positive Youth Development (PYD; Lerner et al., 2005) using Confirmatory Factor Analysis (CFA), that is, prior to evaluating the adolescent self-regulation model in Chapter 6. In addition, multiple group analyses were used to examine whether the PYD measure functioned similarly across gender, and across younger and older adolescent age groups (i.e., model invariance).

**Confirmatory Factor Analyses.** CFA plays a crucial role in model specification as it tests theoretical prepositions by evaluating the fit of specified models to observed data (Brown, 2006). A confirmatory factor model was specified and estimated using AMOS 20 (IBM, 2011). Model parameters were estimated using maximum likelihood estimation.

Following guidelines from Byrne (2010) and Kline (2005), the adequacy of the fit between the specified Five Cs model and the observed data (i.e., model fit) was evaluated using a number of criteria. The first criterion of model fit was examined using the chi-square statistic (statistical non-significance suggests good model fit to data). However, caution is advised when interpreting the chi-square fit statistic (Kline, 2005). Due to its sensitivity in relation to sample size, when using a large sample (e.g.,  $N > 200$ ), a good fit may result in a statistically significant chi-square (Marsh, Balla, & McDonald, 1988). Therefore, additional fit indices are also used as indicators of model fit.

Absolute fit was instead assessed by using the chi-square/ $df$  ratio ( $Q$ ) and the Root Mean Square Error of Approximation (RMSEA) with 90% confidence intervals (90% CI); comparative fit was assessed using the Tucker-Lewis index (TLI), and Bentler's comparative fit index (CFI). Rigorous thresholds were used to assess model fit:  $Q < 5$ ,  $RMSEA \leq .08$ <sup>13</sup>, CFI and TLI  $\geq .90$  reflect adequate fit, while  $Q < 2$ ,  $RMSEA \leq .06$ , CFI and TLI  $\geq .95$  indicate excellent fit (Byrne, 2010; Tabachnick & Fidell, 2007). In addition, the standardised root-mean-square residual (SRMR) was also reported as recommended (Hu & Bentler, 1999), with values less than 0.08 indicative of acceptable model fit. When comparing the relative fit of two competing models, the Akaike Information Criteria (AIC) and delta AIC ( $\Delta$  AIC; i.e., larger AIC minus smaller AIC) were used. The lower AIC value depicts the preferred model.

**Invariance Analysis.** Multiple group analyses were used to assess the factor structure of the PYD model using CFA across age (early vs. late adolescence) and

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<sup>13</sup> RMSEA and SRMR less than .10 indicate an acceptable fit for sample sizes smaller than 500 (Weston & Gore, 2006).

gender groups. Tests for invariant factorial structure of the specified models were conducted using multiple-group CFAs to fit a series of hierarchically nested factor structures (Chen, Sousa, & West, 2005). By assessing invariance, we can determine if individual factor subscales are functioning similarly across groups (e.g., gender, age).

First, the model is fitted to both groups separately to establish baseline model fit of the hypothesised model. Second, configural invariance is assessed by allowing the same set of subscales to form a factor in each group while allowing all model parameters to be freely estimated. If the configural invariance fits according to the model fit criteria outlined above (i.e.,  $Q < 5$ ,  $RMSEA \leq .08$ , CFI and TLI  $\geq .90$ ), subsequent tests may be conducted.

Metric (weak) invariance assesses the factor loadings across groups, first for first-order factor-loadings, then for second-order factor-loadings (Steenkamp & Baumgartner, 1998). Equivalence at the metric level allows the comparison of relationships. Scalar (strong) equivalence between groups is then tested by constraining factor loadings and intercepts to be equal. When both factor loadings and intercepts are invariant (i.e., scalar invariance), mean differences on the higher order latent factor (i.e., PYD) can be tested. Following Widaman and Reise (1997), the disturbances (i.e., error residuals) of the first-order factors were also tested.

Measurement invariance is supported when constrained models do not provide poorer fit as indicated by fit indices (i.e.,  $\Delta CFI$ ) and the chi-square difference test. The chi-square difference test is deemed inappropriate in isolation, therefore the  $\Delta CFI$  index with a cut-off criterion of  $<.01$  is used (Byrne, 2010). If a significant difference between groups was identified, modification indices and the factor-ratio method (Cheung & Rensvold, 1999) were utilised to identify group differences.

**4.8.2 Statistical Analysis for Chapter 6 (Study 2B).** The primary goal of this chapter is to test the hypothesised relationships between the individual, social and emotional predictor variables (i.e., prosocial images, emotion regulation, peer influence, and future orientation, self-regulation), and positive (i.e., PYD and contribution) and negative (i.e., risk and depression) indices of development. In

addition, a second goal is to assess whether the proposed relationships differ between younger and older adolescents and across gender using multi-group analyses.

***Structural Equation Modelling.*** The relationships between prosocial prototypes, resistance to peer influence, emotion-regulation, future orientation, and goal-directed behaviour (i.e., SOC model), and outcomes of positive (PYD and contribution) and negative (depression and risky-behaviours) indices of adolescent development are assessed using structural equation modelling (SEM). A structural model was specified and estimated using MPlus 7.1 ((Muthén & Muthén, 2011). Model parameters were estimated using maximum likelihood estimation.

The relationships among hypothetical latent constructs can be assessed using SEM and are indicated by observed variables allowing for the separation of the measurement and structural components of the model. Unlike other statistical procedures (i.e., ANOVA or multiple regression), SEM allows the researcher to specify relatively “error free” latent variables by correcting for biases that could result from random error and variance not attributable to the targeted constructs (MacCallum & Austin, 2000).

Two-step modelling was employed whereby the structural regression model is first specified as a measurement model before the structural components are investigated (Kline, 2005). In terms of model specification, SEM has a number of requirements. First, theoretically guided, *a priori* models must be specified. Second, each latent variable must have a sufficient number of indicators using psychometrically adequate measures. Finally, relevant variables that may influence the effects being tested must be included (Kline, 2005). Model-fit statistics are used to determine the fit of the model to the observed data and without empirical evidence that such is the case, the relationship that the authors find ‘significant in the structural model may be misleading’ (Scheiber, Stage, King, Nora, & Barlow, 2006, p.335). Furthermore, careful consideration should be given to parsimony, directionality and substantive reasons given for predicting causal sequences (Kline, 2005).

Taking these factors into consideration, a number of structural equation models are tested to investigate the relationships between prosocial images, emotion regulation, peer influence, future orientation, goal-directed behaviours, and outcomes

of PYD, contribution, risky-behaviours and depression, in a sample of Irish adolescents (see Figure 6.2, Section 6.4.3). In order to assess gender and age differences, separate models are then tested for gender and age groups. Finally, multi-group analyses is conducted to determine whether the model functions differently across gender, or between adolescent age-groups (i.e., 12-15 years, 16-19 years).

**4.8.3 Statistical Analysis for Chapter 7 (Study 2C).** The goals of this chapter are fourfold. First, further assessment of the psychometric properties of the Five Cs model of PYD is conducted using time 2 data. This is followed by an assessment of the predictive ability of the adolescent self-regulation model on positive and negative indices of development 12-months later. Next, the stability of PYD over 12-months at a group-level and an individual-level is tested. Finally, this chapter examines the characteristics associated with group- and individual-level change in PYD over 12-months.

***Five Cs Model Psychometric Properties.*** The psychometric properties of the Five Cs model of PYD were assessed in a number of ways. First, the Five Cs model of PYD was retested using time 2 data only. Confirmatory factor analyses, with model fit indices outlined previously, were used to assess the model using time 2 data.

Second, modifications made to the Five Cs measure of PYD (Bowers et al., 2010) were assessed using competing CFA models. Given the degrees of freedom for each model was equal, the chi-square difference test could not be used to compare models. Therefore, fit indices, such as absolute fit (i.e.,  $\chi^2$ ), RMSEA and change in AIC ( $\Delta$  AIC), were used to compare models.

Third, Pearson Product Moment Correlation Coefficients were used to examine whether social desirability response bias influenced PYD total, and subscale scores. Weak correlations (i.e.,  $< .30$ ; Dancey & Reidy, 2007) would indicate that social desirability did not influence PYD scores.

Fourth, the construct validity of the PYD measure was assessed by constructing a structural model using time 1 PYD scores and time 2 outcomes of contribution, risky-behaviours and depression. Fit indices previously outlined were



used to assess the model. In addition, this structural model was tested for gender and age invariance using multiple-group analyses as previously outlined.

***Time 1 adolescent self-regulation predictors and contribution, depression, and risky-behaviours at time 2.*** The second aim of this study is to assess the predictive ability of the adolescent self-regulation model on positive and negative indices of development 12-months later. Thus, SEM (i.e., MPlus; Múthen & Múthen, 2011) is used to specify the model tested in Study 2B using time 2 outcomes (i.e., PYD, contribution, risky-behaviours and depression).

**Stability of PYD at time 2.** The third aim of the current study was to assess change in PYD over time using time 1 and time 2 data. This is conducted in three ways; assessing group-change over 12-months, assessing individual-level change over 12-months, and examining the characteristics associated with different levels of change.

***Assessing group-level change over 12-months.*** In order to assess the stability of the overall PYD scores and the PYD subscales over 12-months, rank-order stability correlation coefficients were used. The retest correlations between time 1 and time 2 scores of PYD, caring, character, competence, confidence, and connection and shown in Table 7.6. High correlation coefficients (i.e.,  $> .50$ ; Dancey & Reidy, 2007) indicate that the sample tend to keep the same rank order in PYD scores over 12-months.

***Assessing individual-level change over 12-months.*** In order to analyse individual-level differences in stability of PYD, a person-orientated analysis was necessary. Thus, cluster analysis was conducted.

***Cluster Analysis.*** Cluster analysis is a person-orientated approach that allows the identification of empirically selected sub-groups of individuals that have similar score profiles on PYD at the two time points (Bergman & Magnusson, 1997). Cluster analysis provides an advantage over related techniques, such as trajectory

analysis, when only two developmental time points are being examined (Hawkins et al., 2011). Cluster analysis was conducted using PASW Statistics 20 (IBM, 2011).

The cluster analysis was conducted by case<sup>14</sup> in two stages. First, a hierarchical cluster analysis using Ward's (1963) method was performed using squared Euclidean distances, to identify the best number of clusters to extract from the data (Rapkin & Luke, 1993). In the second stage of the cluster analysis, a K-means cluster analysis was performed, with the number of clusters suggested by the hierarchical analysis specified. Cases were then allocated to clusters and reallocated in successive iterations until the within-cluster sums of squares were minimised (Beauchaine & Beauchaine, 2002).

The quality of a cluster analysis is judged by its capacity to reliably classify the majority of cases, and the interpretability of the average profile of scores for each cluster (Rapkin & Luke, 1993). To further examine the robustness of the solution, the same analysis was performed on a randomly selected two thirds of the sample (von Eye & Bergman, 2003). To further support the cluster groups, a MANOVA was performed to examine whether the differences between cluster groups on the standardised PYD scores at time 1 and time 2 were statistically significant (Rapkin & Luke, 1993).

*Examining the characteristics of change over 12-months.* Finally, in addition to identifying the different patterns of change in PYD, the current study also sought to examine the characteristics that could explain placement in particular developmental groups (Bowers et al., 2011). Therefore, the cluster groups were evaluated to examine whether a number of factors were associated with group membership. In order to assess the gender and age (younger vs. older adolescents) characteristics of the cluster groups, chi-square significance tests were performed to test the representation in the clusters formed. One-way between-groups ANOVAs were conducted using PASW Statistics 20 (IBM, 2011) to examine the

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<sup>14</sup> Cluster Analysis by case means that this procedure attempts to identify relatively homogeneous groups of cases based on selected characteristics (e.g., PYD scores), as opposed to clustering groups together based on variables.

characteristics of clusters in relation to SOC, resistance to peer influence, emotion regulation strategies, future orientation, depression, risky-behaviours, and contribution scores at time 1, and parental style at time 2.

**4.8.4 Data management.** Procedures for handling missing data and screening data for normality are outlined below.

***Handling Missing Data.*** Missing data are the norm in most studies (Allison, 2001; Nakagawa & Freckleton, 2008; Scheffer, 2002), and how this issue is addressed is critical to minimise bias and maximise the use of available information (Allison, 2001). Missing data are categorised in three ways: 1) data can be missing completely at random (MCAR); 2) missing at random (MAR); and 3) not missing at random (NMAR). When data are MCAR, it suggests that ‘missingness’ is not dependent on either the variable of interest or any other variables observed in the dataset. When they are MAR (or conditionally missing at random: Graham, 2009), this suggests that missing data values carry no information about probabilities of ‘missingness’ to the variable of interest (although they are related to some other variable in the data set: Little & Rubin, 1989; Scheffer, 2002). Data that are NMAR (or informatively missing) occur when the ‘missingness’ mechanism depends on the actual value of the missing data (Scheffer, 2002) and is a more serious problem for researchers.

In the past, missing data were dealt with using case deletion (listwise or pairwise) or imputation of the mean score (Scheffer, 2002); however, these conventional methods possess liabilities and newer imputation procedures such as expectation maximisation (EM) are now recommended (Allison, 2001; Graham, 2009; Nakagawa & Freckleton, 2008; Scheffer, 2002). All data was subject to missing data analysis, and where appropriate, EM analysis was undertaken to impute missing data. EM is considered an excellent procedure for handling missing data (Allison, 2001; Graham, 2009). EM is advised when data are MCAR or MAR (Scheffer, 2002) and the percentage of missing data is, at most modest (i.e., less than 30%: Owen et al., 2007; Peugh & Enders, 2004). In SPSS, Little’s test is used to determine whether data are MCAR: if the resultant chi-square value is statistically significant ( $p < .05$ ), data are not considered MCAR. If the level of “missingness” is

less than 30%, it is appropriate to use the expectation maximisation algorithm for imputing missing data.

***Screening for Normality and Outliers.*** Prior to conducting statistical analysis, data was screened for normality and outliers as recommended by Tabachnick and Fidell (2007) and Field (2009). The Kolmogorov-Smirnov statistical test of normality and analyses of skewness and kurtosis values were used to assess all scales included in the analyses.

## 5. Chapter Five

### Study 2A: Psychometric Properties of the Five Cs Model of PYD

#### 5.1 Chapter Overview

The purpose of the current study were threefold: 1) to conduct a confirmatory factor analysis (CFA) of the hypothesised *a priori* factor structure of the Five Cs Model of positive youth development (PYD) in Irish adolescents; 2) to assess the psychometric properties (i.e., reliability and validity) of the PYD model in Irish adolescents; and 3) to examine whether the model performs consistently across gender, and younger- and older-adolescent age groups using multiple group analyses.

#### 5.2 Introduction

Both Fabrigar et al. (1999) and Browne (2006) recommend specification and testing of a CFA model based on results of an EFA in a different study/data set. Therefore, the current study aims to confirm the *a priori* hypothesised five-factor higher-order PYD model reported by Lerner and colleagues (2005; Phelps et al., 2009).

The precise measurement of proposed constructs is critical to quantitative research in psychology. Confirmatory factor analysis plays a key role in the development of measures as it tests theoretical prepositions by evaluating the fit of specified models to data (Brown, 2006). When knowledge of an underlying latent variable structure (e.g., the 5 Cs Model of PYD) is derived from theory and/or empirical research, CFA is recommended (Byrne, 2010; Fabrigar et al., 1999; Thompson, 2004). CFA holds advantages over *exploratory factor analysis* (EFA) when there is a strong basis for the specification of a model (or number of competing models). In addition, the results of CFA are less likely to be attributable to chance characteristics in data (Fabrigar et al., 1999). Furthermore, given the *a priori* nature of CFA, it is the primary means of assessing the nature of relationships between latent constructs (Jackson, Gillaspay Jr, & Purc-Stephenson, 2009), and allows for focused examination of specific hypotheses about data.

As previously outlined in Chapter 1, a number of concerns were highlighted in the measurement of the Five Cs Model of PYD. These included concerns about the indicators used to operationalize the Five Cs PYD Model across adolescence;

concern about conceptual clarity of the Five Cs; concern about the manifestation of PYD across gender; and concerns about the generalizability of a measure of PYD outside of North America. Furthermore, previous research has not conducted in-depth analysis of the psychometric properties of the Five Cs measure, relying on measures of internal reliability and convergent validity (e.g., Lerner et al., 2005, Phelps et al., 2009; Bowers et al., 2010). It is evident that the Five Cs model of PYD requires further research with independent samples in order to further test its empirical validity. Thus, the current study further assesses the internal reliability of the Five Cs model in an independent sample, and assesses the convergent and known-groups validity of the Five Cs measure. It is hypothesised that scores on the PYD measure will correlate positively with scores on a measure of contribution, and negatively with scores on a measure of depression and risky behaviours. In addition, it is hypothesised that PYD total and subscales will differentiate between depressed and non-depressed groups. In terms of age and gender differences, in line with previous research, the Five Cs were hypothesised to differ across gender (Lerner et al., 2008). It was also hypothesised that as many of the domains of positive self-concept decrease over the early adolescence years (Harter, 1998), older adolescents would have significantly lower PYD scores compared to younger adolescents.

### 5.3 Method

**5.3.1 Participants.** A total sample of 672 respondents aged eleven to nineteen ( $M$  age = 14.81,  $SD$  = 1.64, males = 57.6%) participated in the research. Participants were students attending 11 post-primary schools located in the Mid- and North-West region of the Republic of Ireland. Three schools were single sex (two all-male  $n$  = 123, one all-female  $n$  = 20), and eight schools were mixed-gender ( $n$  = 446), including one categorised as disadvantaged ( $n$  = 83). Students from across all stages of the Irish Post-Primary school system took part in the research, with 1st year ( $n$  = 146; 21.7%), 2<sup>nd</sup> year ( $n$  = 130; 19.3%), 3<sup>rd</sup> year ( $n$  = 86; 12.8%), 4<sup>th</sup> year ( $n$  = 110; 16.4%), 5<sup>th</sup> year ( $n$  = 184; 27.4%) and 6<sup>th</sup> year ( $n$  = 16; 2.4%) included. Demographic information was obtained from the student questionnaire and a short parental questionnaire included with parental consent forms. The majority of students were identified as “Born in Ireland” ( $n$  = 277, 41.2%), while 15.3% indicated other (e.g., England, US;  $n$  = 50, 7.4%). A large proportion of parents did

not answer this question ( $n = 345$ , 51.3%). In terms of ethnicity, the majority were identified as “White” ( $n = 318$ , 47.3%), while a further 0.9% ( $n = 3$ ) identified as “Mixed race” and “Asian” respectively, and less than 1% identified as “Other”. Again, a large proportion of parents did not complete this question ( $n = 345$ , 51.3%). Using a student-questionnaire item, twenty-two percent of participants indicated living in an “Urban” area ( $n = 148$ ), while 67.4% ( $n = 453$ ) lived in rural areas, while missing data accounted for 10.6% ( $n = 71$ ) of respondents. Mother’s education was also reported, and was deemed well distributed (8.3% Junior Certificate or less, 12.6% Leaving Certificate, 11.3% sub-degree, 7.4% primary degree, 7.9% professional qualification, 0.3% “Other”, 52.2% missing).

**5.3.2 Procedure.** The procedure for data collection is outlined previously in Section 4.7. Data were analysed using PASW 20.0 and AMOS 20.0.

**5.3.3 Measures.** A description of all measures used in the study is provided in Chapter 4.

The *Positive Youth Development “Five C”* measure for grade 8-12 (approximately 13-17 years old; Lerner et al., 2005; Phelps et al., 2009) was used to assess PYD. Internal reliability (Cronbach’s alpha) for the current sample is found in Table 5.3.

*Depression* was measured by the 20-item *Center for Epidemiological Studies Depression Scale* (CES-D; Radloff, 1977). Cronbach’s alpha for the current sample was 0.88.

*Contribution* was measured using two equally weighted subscales of ideology and actions derived by Lerner and colleagues (2005). In the current study Cronbach’s alpha was good ( $\alpha = .76$ ).

*Risk behaviours* were measured using scales of substance use and delinquency derived from the PSL-AB and the Monitoring the Future (2000) questionnaires to form a composite measure of risk behaviours. Cronbach’s alpha for the current study was 0.77.

**5.3.4 Data Analytic Strategy.** The procedures for handling missing data and normality are outlined in Chapter 4 (see Section 4.8.4).

**Missing data analysis.** Missing data analysis was conducted on the PYD data ( $N = 672$ ). Little's Missing Completely At Random (MCAR) test was significant,  $\chi^2(5112) = 5658.00, p < .001$ , suggesting the data was not missing at random. The highest level of "missingness" in the dataset was 28.6%, observed for future orientation. This suggests a fatigue effect, as the future orientation measure was the last measure in the questionnaire packet. EM is advised when data are MCAR or MAR (Scheffer, 2002) and the percentage of missing data is, at most modest (i.e., less than 30%; Owen et al., 2007; Peugh & Enders, 2004). Thus, expectation maximisation algorithm for imputing missing data was utilised.

**Normality and Outliers.** Prior to conducting statistical analysis, data was screened for normality and outliers as recommended by Tabachnick and Fidell (2001) and Field (2005). The Kolmogorov-Smirnov statistical test of normality and analyses of skewness and kurtosis values revealed that the distribution of scores for some of the individual items on the PYD measure were not normal. However, violations of the assumptions of normality are quite common in large samples (Pallant, 2007). The kurtosis values of the PYD items range from -1.48 to 2.41, therefore no item was substantially kurtotic. In addition, all PYD items showed skewness within an acceptable range (univariate skewness less than 3.0; Kline, 2005).

## 5.4 Results

**5.4.1 Confirmatory Factor Analysis.** A confirmatory factor model was specified and estimated using AMOS 20 (IBM, 2011). Model parameters were estimated using maximum likelihood. Rigorous thresholds of model fit criteria were used to indicate model fit;  $Q < 5$ , RMSEA  $\leq .08$ , CFI and TLI  $\geq .90$  reflect adequate fit, while  $Q < 2$ , RMSEA  $\leq .06$ , CFI and TLI  $\geq .95$  indicate excellent fit (Byrne, 2010; Tabachnick & Fidell, 2007). A test of the five-factor model of PYD (Lerner et al., 2005; Phelps et al., 2009) with no correlations between indicators failed to meet the recommended criteria for adequate model fit (see Model A, Table 5.1). Furthermore, correlations specified by previous research were added (Phelps et al., 2009). Specifically, correlations were included between Harter subscales due to shared method variance (e.g., subscales of social competence, academic competence and self-worth). However, the model again failed to meet the recommended criteria



for adequate fit (Model B). However, all the lower-order and higher-order factor loadings were significant (range = .37 - .84) and above the minimum threshold of 0.30 (Bowers et al., 2010). This suggests that the structure of the Five Cs model is appropriate. Therefore, the five-factor model was retained and subjected to model modification.

#### **5.4.2 Modifications of the Positive Youth Development Measure.**

Evidence of misfit is captured by modification indices (MIs). The MIs can be conceptualised as a  $\chi^2$  statistic with one degree of freedom (Joreskog & Sorbom, 1993). For each fixed parameter specified, AMOS provides an MI, which represented the expected drop in overall  $\chi^2$  value if the parameter were to be freely estimated in a subsequent model (Byrne, 2010). Each MI value is accompanied with an expected parameter change (EPC) value (Saris, Satorra, & Sörbom, 1987). This represents the expected change for each fixed parameter and illustrates important information regarding the sensitivity of the evaluation of fit to any reparameterization of the model. In sum, the EPC value illustrates whether freeing the estimated parameter would result in a substantive improvement in model fit. In addition, the content of item pairs with high modification indices was examined and models were only re-specified if theoretical justification for the changes was established (Thompson, 2004).

Reviewing the modification indices (MIs), a number of additional parameters were suggested. For instance, MIs suggested covariations between the “Caring” and “Character” factors (MI = 157.34, EPC = 1.25), connection to peers and social competence (MI = 36.30, EPC = .92), and connection to family and behavioural conduct (MI = 25.38, EPC = .79). The inclusion of a covariance between Caring and Character is supported by previous research that included covariations between these two factors (e.g., Jelicic et al., 2007). The other covariances were deemed theoretically appropriate given previous research suggesting relationships between social competence and ability to make friends (e.g., Gottman, Gonso, & Rasmussen, 1975), and family relationships and adolescent morality (e.g., White, 2000). This model was a significantly improved model fit as assessed by the  $\chi^2$  difference test, and displayed adequate fit to the data (see Model E, Table 5.1). Factor loadings for the final model can be seen in Table 5.2.

Table 5.1

*Confirmatory factor analysis of the Five Cs measure of PYD at time 1 (N = 672)*

Model	$\chi^2$	df	$Q$	RMSEA	90% CI	SRMR	TLI	CFI	AIC Model	$\Delta \chi^2$
(A)	811.97	99	8.20	.10	.10, .11	.11	.74	.78	885.97	-
(B)	611.26	90	6.79	.09	.09, .10	.09	.79	.84	703.26	200.71***
(C)	421.47	89	4.74	.08	.07, .08	.06	.86	.90	515.47	189.79***
(D)	393.16	88	4.47	.07	.06, .07	.06	.87	.91	489.16	28.31***
(E)	355.47	87	4.09	.07	.06, .07	.06	.89	.92	453.47	37.69***

**Note.** Model (A) = Five factor model (no correlations). Model (B) = Five factor model with Phelps et al (2009) correlations. Model (C) = Residual errors of Caring and Character added. Model (D) = Subscales of connection to family and behavioural conduct allowed covary. Model (E) = Subscales of connection to peers and social competence allowed covary. 90% CI = 90% Confidence Interval.  $\Delta \chi^2$  = chi-square difference test. df = degrees of freedom;  $Q$  = absolute fit; RMSEA = root mean square error of approximation; SRMR = Standardised root-mean-square residual; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; AIC = Akaike Information Criteria.

Table 5.2

*Standardised and non-standardised factor loadings (and standard errors) for the five-factor model of PYD at time 1*

Item	$\beta$	B	SE
<b>Caring</b>			
Caring 1	.55	1.00	---
Caring 2	.80	1.42	.11
Caring 3	.79	1.47	.11
<b>Character</b>			
Social Conscience	.81	1.00	---
Personal Values	.68	0.76	.05
Valuing of Diversity	.67	0.93	.06
Behavioural Conduct	.35	0.42	.05
<b>Competence</b>			
Social	.64	1.00	---
Physical	.45	0.91	.16
Academic	.52	0.94	.16
<b>Confidence</b>			
Self-Worth	.74	1.00	---
Positive Identity	.70	0.66	.05
<b>Connection</b>			
Community	.67	1.00	---

Table 5.2

*Standardised and non-standardised factor loadings (and standard errors) for the five-factor model of PYD continued.*

Item	$\beta$	B	SE
Peer Connection	.51	0.65	.06
Family Connection	.62	0.86	.06
School Connection	.71	0.95	.06
<b>PYD</b>			
Caring	.34	0.47	.07
Character	.54	1.05	.10
Competence	.62	0.93	.10
Confidence	.81	1.29	.11
Connection	.94	1.86	.12

*Note.* Factor loadings are all statistically significant ( $p < .001$ ).

**Reliability.** The internal reliability of the PYD total scale ( $\alpha = .72$ ; 95% CI = .69-.75), and majority of subscales (range  $\alpha = .45$ [competence] - .75[caring]), was good. The internal reliability of the Competence subscale was not satisfactory ( $\alpha = .45$ , 95% CI = .37-.52). However, for the current analyses, the problem of low internal reliability may be resolved by using SEM, as latent variables are error free (Shevlin, 2009). Therefore, the competence subscale was retained. Alpha coefficients and confidence intervals for all subscales (and validation measures), as well as means, standard deviations, and score ranges are presented in Table 5.3.

The five PYD subscales were moderately intercorrelated (see Table 5.4) suggesting that they measure interrelated, yet distinct, constructs (i.e., an individual may evince caring [empathy] but not confidence [e.g., self-esteem]). A summary of correlations for all measures used in the current study are provided in Table 5.4.

Table 5.3

*Descriptive Statistics for all Measures in Study 2A*

Subscale	M	SD	Cronbach's Alpha ( $\alpha$ )	95% CI	Possible Range	Attained Range	Skew	Kurtosis
Caring	8.70	2.05	.75	.71-.78	0-12	1.67-12.00	-0.54	-0.18
Character	7.96	1.77	.71	.67-.74	0-12	1.93-11.85	-0.46	0.09
Competence	6.50	1.59	.45	.37-.52	0-12	0.70-10.75	-0.11	-0.05
Confidence	7.61	1.97	.54 <sup>a</sup>	-	0-12	0-12.00	-0.22	0.33
Connection	8.36	1.74	.73	.69-.76	0-12	1.06-12.00	-0.57	0.59
PYD	7.83	1.26	.72	.69-.75	0-12	3.09-11.35	-0.18	0.21
Contribution	50.88	14.30	.76	.73-.79	0-100	14.58-93.75	0.16	-0.04
Depression	14.74	9.51	.89	.89-.91	0-60	0-53.00	1.18	1.49
Risk	0.65	0.52	.77	.75-.80	0-5	0.07- 4.69	2.83	12.87

*Note.* <sup>a</sup> = correlation coefficient; Cronbach's alpha does not make conceptual sense for two-item measures, hence, correlation coefficients were calculated (Streiner, 2003). CI = Confidence interval.

Table 5.4

*Summary of Time 1 intercorrelations for subscales and Total PYD, Contribution, Depression and Risk Scale Scores*

Subscale	CR	CH	CP	CF	CN	PYD	Contribution	Depression
Caring (CR)								
Character (CH)	.56***							
Competence (CP)	.05	.19***						
Confidence (CF)	.10*	.30***	.54***					
Connection (CN)	.32**	.49***	.41***	.54***				
PYD	.61***	.74***	.60***	.71***	.79***			
Contribution	.34***	.49***	.29***	.16***	.43***	.49***		
Depression	-.01	-.12*	-.43***	-.58***	-.46***	-.45***	-.09*	
Risk	-.26***	-.34***	-.16***	-.13*	-.37***	-.37***	-.16***	.16***

*Note.* PYD = positive youth development.

\* =  $p < .05$ , \*\* =  $p < .001$ .

**5.4.3 Construct Validity.** Construct validity refers to the degree to which a particular measure relates to other measures, based on theoretically derived hypotheses regarding the constructs being investigated (Carmines & Zeller, 1979). Construct validity is pivotal when criterion-related validity cannot be established (i.e., when there is no acceptable gold standard measure which with to establish the quality of the construct being measured; Cronbach & Meehl, 1955). As there is as yet no gold-standard measure of PYD, two types of construct validity are assessed; convergent validity and known-groups validity.

**Convergent validity.** Convergent validity refers to the degree to which scores on a specified measure are correlated with scores on related measures (Furr & Bacharach, 2008). Convergent validity is measured by testing hypotheses derived from previous research on PYD (e.g., Lerner et al., 2005). Specifically, indices of positive and negative development which have been related to PYD in previous research were assessed (i.e., contribution, risky-behaviours). Pearson Product Moment correlations and hierarchical multiple regressions were used to evaluate the hypothesised relationships. A summary of all correlations are presented in Table 5.4.

Pearson Product Moment correlations illustrated consistent patterns between the Five Cs, PYD, and outcomes of contribution and risky-behaviours. For contribution, all correlations were significant ( $p < .001$ ), with moderate (Dancey & Reid, 2007) positive correlations across PYD subscales (range  $r = .16$  to  $.49$ ). Similarly for risky-behaviours, all correlations were significant ( $p < .05$ ), with low to moderate negative correlations across PYD subscales (range  $r = -.13$  to  $-.37$ ).

Hierarchical multiple regressions were employed to evaluate how well PYD subscales predicted contribution and risky-behaviour, after controlling for age and gender. Assumptions for regression analysis (e.g., normal distribution, autocorrelations among residuals) were tested with no violations identified. Age and gender were controlled for in step one, and the Five C subscales were entered in Step two.

**Contribution.** The overall model for contribution was significant,  $F(7, 660) = 52.78$ ,  $p < .001$ ,  $r^2 = .36$ , adj.  $r^2 = .35$ . Age and gender were both significant predictors, accounting for 3% of the variance. Four out of the five PYD subscales

were significant, with character, competence, confidence, and connection predicting contribution. Notably, confidence was significantly negatively related to contribution, while character, competence, and connection were positively related to contribution (see Table 5.5 for summary of model results).

*Risky-behaviours.* The overall model for risky behaviours was also significant,  $F(7, 660) = 27.31, p < .001, r^2 = .23, \text{adj. } r^2 = .22$ . Age and gender were both significant predictors, accounting for 8% of the variance. Three out of the five PYD subscales were significant, with character, confidence, and connection predicting risky-behaviours. Notably, confidence was significantly positively related to risky-behaviours, while character and connection were negatively related to risky-behaviours (see Table 5.5 for summary of model results).

Looking at the standardised beta weights for each regression model suggests that character was the most significant predictor of contribution, followed by competence, while connection was the most significant predictor of risky-behaviours, followed by character.



Table 5.5

*Multiple Hierarchical Regressions for PYD subscale and total scores and positive and negative outcomes.*

Predictors	Contribution						Risky-Behaviours					
	B	SE	$\beta$	$r^2$	Adj. $r^2$	F change	B	SE	$\beta$	$r^2$	Adj. $r^2$	F change
(1) Demographics				.04	.03	12.24***				.08	.08	30.22***
Age	0.98	0.28	.11**				0.05	0.01	.16***			
Gender	3.37	1.02	.12**				-0.08	0.04	-.08*			
(2) PYD Subscales				.36	.35	66.58***				.23	.23	24.06***
Caring	0.15	0.28	.02				-0.01	0.01	-.05			
Character	3.01	0.34	.37***				-0.05	0.01	-.16***			
Competence	2.43	0.35	.27***				-0.02	0.01	-.06			
Confidence	-1.56	0.31	-.21***				0.03	0.01	.10*			
Connection	1.99	0.35	.24***				-0.08	0.01	-.28***			

*Note.* Adj.  $r^2$  = adjusted  $r^2$ ; \* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$ .

***Known-groups validity.*** Known-groups validity describes the ability of a measure to discriminate across different groups (e.g., clinical and non-clinical samples). These groups are theoretically expected to score differently on the construct being measured (Cronbach & Meehl, 1955). Known-group validity is assessed through comparisons of participants who show lower versus higher levels of depression. Scores of lower than 16 are indicative of no clinical significance, while scores of 16 and higher indicates clinical significance (Radloff, 1977). Therefore group comparisons were conducted using independent t-tests to assess the relationships between high and low depression groups and the subscales of PYD and total PYD scale scores.

T-tests showed PYD total scores and scores of PYD subscales of character, competence, confidence, and connection were significantly different across both groups, with the high depression group illustrating significantly lower character, competence, confidence and connection scores (see summary of T-tests in Table 5.6). The subscale of caring was not significantly different between low- and high-depression groups ( $p > .05$ ). Effect sizes illustrated a small effect size for the character subscale, and a large effect size for the competence, confidence, connection and PYD total scale scores.

Table 5.6

*Means, Standard Deviations, and T-Tests for PYD scale scores and depression in Study 2A*

Measure	Low Depression			High Depression			<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>				
Caring	437	8.69	2.04	235	8.71	2.08	670.00	-0.06	.952	.01
Character	437	8.10	1.74	235	7.69	1.78	670.00	2.87	.004**	.23
Competence	437	6.91	1.45	235	5.76	1.57	670.00	9.50	< .001***	.76
Confidence	437	8.26	1.70	235	6.40	1.87	670.00	13.08	< .001***	1.04
Connection	437	8.83	1.48	235	7.47	1.85	396.89 <sup>a</sup>	9.69	< .001***	.81
PYD	437	8.26	1.15	235	7.20	1.22	670.00	10.01	< .001***	.89

*Note.* <sup>a</sup> = degrees of freedom adjusted due to significant Levene's test of homogeneity of variance.

\* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$ . *d* = Cohen's *d* effect size.

**5.4.4 Factorial Invariance of Positive Youth Development.** Gender and age-group invariance is assessed using guidelines outlined in Chapter 4 (see section 4.8.1).

**Gender Invariance.** The Five Cs model of PYD was tested for factorial invariance across gender (Table 5.7) using multiple-group CFAs to fit a series of hierarchically nested factor structures (Chen, Sousa & West, 2005). First, a baseline model was established to examine model fit of the hypothesised model for both gender groups separately. Model fit was good for both gender groups: Males,  $\chi^2_{(88)} = 189.63, p < .001; Q = 2.16; RMSEA = .064$  (90% CI = .051-.076); CFI = .92; TLI = .89; AIC = 285.63; and Females,  $\chi^2_{(88)} = 195.29, p < .001; Q = 2.22; RMSEA = .066$  (90% CI = .053-.078); CFI = .92; TLI = .89; AIC = 291.29.

Next, configural invariance was examined in order to establish model fit across gender. Configural invariance (i.e., all model parameters to be freely estimated) was confirmed;  $\chi^2_{(177)} = 385.31, p < .001; Q = 2.18; RMSEA = .046$  (90% CI = .039-.052); CFI = .92; AIC = 639.31.

The third step was to test metric (weak) invariance by constraining first, the lower-order factor loadings (model 2), and then the higher- and lower-order factor loadings (model 3), across gender groups. This assesses whether the factor loadings (i.e., the relationship between the latent factors and their indicators), function similarly across groups. The results showed no significant differences between the configural model and model 2 and model 3, indicating first- and second-order factor loadings functioned equivalent across gender groups (i.e., metric invariance). Thus, the PYD subscale indicators function similarly for both males and female adolescents.

The fourth step involves testing scalar invariance (model 4). Scalar invariance is used to assess whether the intercepts (i.e., the level of scores) of the indicators used in the model are the same across groups. Results of model 4 indicated significant differences between males and females (see model 4 Table 5.7). Using the factor-ratio method (Cheung & Rensvold, 1999), eight intercepts were found to differ significantly across gender; athletic competence, peer connection, positive identity, social conscience, academic competence, caring1, caring2, and caring3 ( $ps < .001$ ). Model 4a depicts the model fit indices this model with eight

constraints freed. Partial scalar variance was observed in model 4a, as a significant chi-square difference test, but a non-significant difference in  $\Delta\text{CFI}$  ( $\Delta\text{CFI} < .01$ ) indicated partial scalar invariance between males and females. Although group differences were observed between intercepts, this need not preclude the usefulness of these items in measuring underlying constructs (Cooke, Kosson, & Michie, 2001).

Subsequently, the invariance of disturbances of first-order factors were tested (model 5). The chi-square difference test was non-significant ( $p > .05$ ) and the  $\Delta\text{CFI}$  was negligible (.003). Therefore, no gender differences in the disturbances (i.e., the error terms) of the first-order factors were observed. Thus, measurement invariance was ascertained at the metric (weak) level, while partial invariance was observed at the scalar (strong) level.

As metric and partial-scalar invariance were observed, differences between groups in the latent-factor means were assessed. Using the partial scalar invariant model, first-order latent mean differences were observed across all five PYD subscales; caring (Est = 1.27,  $z = 7.78$ ,  $p < .001$ ), character (Est = 0.89,  $z = 5.12$ ,  $p < .001$ ), confidence (Est = -0.95,  $z = -5.17$ ,  $p < .001$ ), connection (Est = 0.35,  $z = 2.10$ ,  $p < .05$ ), and competence (Est = -0.65,  $z = -4.70$ ,  $p < .001$ ). Notably, females scored higher on caring (Females  $M = 9.58$ ,  $SD = 1.72$ ; Males  $M = 8.09$ ,  $SD = 2.02$ ), character (Females  $M = 8.30$ ,  $SD = 1.66$ ; Males  $M = 7.71$ ,  $SD = 1.78$ ), and connection (Females  $M = 8.57$ ,  $SD = 1.79$ ; Males  $M = 8.21$ ,  $SD = 1.70$ ), where males scored higher on confidence (Males  $M = 7.99$ ,  $SD = 1.86$ ; Females  $M = 7.23$ ,  $SD = 1.98$ ), and competence (Males  $M = 6.76$ ,  $SD = 1.48$ ; Females  $M = 6.17$ ,  $SD = 1.66$ ).

Latent mean differences were also tested in relation to the higher order factor of PYD. No significant difference was found between females and males (Est = 0.04,  $z = 0.36$ ,  $p = .72$ ).

Table 5.7

*Tests of Five-factor PYD measure for factorial invariance by gender at time 1*

Model	$\chi^2$	df	$\Delta \chi^2$	$\Delta df$	RMSEA	RMSEA (90% CI)	CFI	AIC
Gender Factorial Invariance								
(1) Configural model	385.31	177	-	-	.046	.039, .052	.92	639.31
(2) First-Order factor loadings invariant	397.17	188	11.86	11	.044	.038, .050	.92	629.17
(3) First- and second-order factor loadings invariant	407.19	193	10.02	5	.045	.039, .051	.92	633.19
(4) First- and second-order factor loadings and intercepts of measured variables invariant	658.46	209	251.27***	16	.062	.057, .067	.82	852.46
(4a) First- and second-order factor loadings and intercepts of measured variables invariant – 8 intercepts freed	447.77	201	40.58***	8	.047	.041, .053	.91	657.77
(5) First- and second-order factor loadings, intercepts, and disturbances of first-order factors invariant	455.60	206	7.83	5	.047	.041, .052	.91	655.60

*Note.* RMSEA = root mean squared error of approximation; CFI = Comparative Fit Index; CI = Confidence Interval. \* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$ .

**Early and Late Adolescence.** The Five Cs Model of PYD was also tested for factorial invariance across age groups (younger [11-15 years old] and older adolescents [16-18 years old]) to assess whether the PYD model functioned similarly across the adolescent period.

The results illustrated metric and scalar invariance across age groups (see Table 5.8). The invariance of disturbances of first-order factors was subsequently tested (model 5), with no difference observed in the disturbances of the first-order factors. Therefore measurement invariance was ascertained at the metric (weak) level and scalar (strong) levels.

As metric and scalar invariance were observed, differences in latent factor means could be assessed. Using the scalar invariance model, a significant difference was found for caring (Est = 0.30,  $z = 2.13$ ,  $p = .03$ ), character (Est = 0.66,  $z = 3.58$ ,  $p < .001$ ) and connection, (Est = 0.56,  $z = 3.13$ ,  $p < .001$ ). Specifically, younger adolescents had significantly higher scores for caring (Younger  $M = 9.00$ ,  $SD = 2.02$ ; Older  $M = 8.61$ ,  $SD = 2.04$ ), character (Younger  $M = 8.29$ ,  $SD = 1.79$ ; Older  $M = 7.70$ ,  $SD = 1.63$ ), and connection subscales (Younger  $M = 8.62$ ,  $SD = 1.80$ ; Older  $M = 8.15$ ,  $SD = 1.71$ ). No differences were found between age groups for competence and confidence factors ( $p$ 's  $> .05$ ).

Latent mean differences were also tested in relation to the higher order factor of PYD. A significant difference was found (Est = 0.32,  $z = 3.28$ ,  $p = .001$ ), indicating that younger adolescents ( $M = 8.09$ ,  $SD = 1.27$ ) had a significantly higher score on the PYD factor than older adolescents ( $M = 7.66$ ,  $SD = 1.20$ ).

Table 5.8

*Tests of Five-factor PYD measure for factorial invariance by age group at time 1*

Model	$\chi^2$	df	$\Delta \chi^2$	$\Delta df$	RMSEA	RMSEA (90% CI)	CFI	AIC
Age Group Factorial Invariance								
(1) Configural	401.03	177	-	-	.050	.044, .057	.91	661.03
(2) First-Order factor loadings invariant	419.46	188	18.43	11	.049	.043, .056	.91	657.46
(3) First- and second-order factor loadings invariant	424.78	193	5.32	5	.049	.043, .055	.91	652.78
(4) First- and second-order factor loadings and intercepts of measured variables invariant	464.33	209	39.55***	16	.049	.043, .055	.90	660.33
(5) First- and second-order factor loadings, intercepts, and disturbances of first-order factors invariant	475.40	214	11.07*	5	.049	.043, .055	.90	661.40

*Note.* RMSEA = root mean squared error of approximation; CFI = Comparative Fit Index; CI = Confidence Interval.

\*\*\* =  $p < .001$ ; \*\* =  $p < .01$ ; \* =  $p < .05$ .



## 5.5 Discussion

The purpose of this study was to investigate the dimensionality, reliability and the validity of the Five Cs model of positive youth development with a sample of Irish adolescents. Confirmatory factor analyses indicated that the five-factor higher-order model did not meet established fit criteria (i.e., the model failed to meet recommended conventional fit indices for CFI, TLI, RMSEA and SRMR). The higher-order factor loadings (i.e., caring, character, competence, confidence and connection) were significant, and the lower-order indicators (e.g., positive identity) loaded above .30, therefore the five-factor model was retained and subjected to model modification. Modification indices suggested the addition of three covariances (i.e., between caring and character; connection to peers and social competence; and connection to family and behavioural conduct). Thus, in line with previous research (Lerner et al., 2005; Phelps et al., 2009), the Five C's model illustrated an adequate fit to the data (i.e.,  $Q < 5$ ; RMSEA  $< .08$ ; CFI  $> .90$ ).

The current study also assessed the reliability of the Five Cs model of PYD. In line with previous research (Bowers et al., 2010; Phelps et al., 2009), the total and subscale scores evinced good scale score internal reliability (PYD total scale  $\alpha = .72$ ; caring  $\alpha = .75$ ; character  $\alpha = .71$ ; connection  $\alpha = .73$ ; confidence  $r = .54$ ). One exception to this was the competence subscale which illustrated poor internal reliability ( $\alpha = .45$ ; 95% CI = .37 - .52). This suggests that scoring on the subscale indicators of social competence, academic competence, and athletic competence did not display consistent inter-item scoring patterns. However, all indicators loaded significantly onto the latent factor of competence (i.e., social competence = .64; athletic competence = .45; academic competence = .52), supporting their inclusion in the model. Furthermore, low internal reliability is often found in scales with a low number of items (Nunnally & Bernstein, 1994), and a high value is not expected when measuring diverse aspects of an overarching construct such as athletic and academic competence (Sijtsma, 2009). Therefore the competence factor was retained.

In terms of construct validity, the PYD subscales showed good convergent and known-groups validity. Specifically, higher character, competence, and connection predicted higher contribution, while higher character and connection

predicted lower risky-behaviours. In addition, PYD subscales of character, competence, confidence, and connection were significantly different across groups of high and low depression. Notably, the observed relationships between confidence and measures of contribution and risky-behaviours were not in the expected direction and contrasted previous research (Lerner et al., 2005). In particular, higher scores on the confidence subscale were related to lower contribution and higher risky-behaviours. This finding may be linked to two lines of thought. First, previous research that has associated overconfidence with narcissism (Landazabal, 2006; Morf & Rhodewalt, 2001). Narcissism has been associated with a number of positive characteristics, such as authority/leadership, assertiveness, and confidence, in addition to negative characteristics such as a sense of entitlement, strong desire to be the centre of attention, and willingness to exploit others (Barry, Grafeman, Adler, & Pickard, 2007; Raskin & Terry, 1988). In terms of outcomes, narcissism has been associated with conduct problems and internalising problems in young people (Barry, Frick, & Killian, 2003; Washburn, McMahon, King, Reinecke, & Silver, 2004). This is in line with the current study, where a positive association between confidence and risky-behaviours was observed. A second line of inquiry examining the contrast between the current results and previous findings (Lerner et al., 2005) may also investigate the influence of cross-cultural differences in the way in which the confidence items are interpreted. Such differences in interpretation may account for the different scoring patterns. For example, the confidence item “when I am an adult, I’m sure I will have a good life”, may elicit connotations of the recent economic recession in Ireland and the widely reported loss/lack of employment throughout the country. Ireland’s adult employment rate (59%) is lower than the OECD average (65%) and the adult employment rate in the US (67%; Better Life Index, 2013). Thus, within the context of the economic recession, Irish adolescents may interpret and answer this confidence item differently compared to adolescents in the US. Future research is needed to clarify the interpretation of the confidence items across cultures, to examine whether the confidence construct measured in the PYD model is in any way analogous to narcissism, and how different forms of confidence and narcissism relate to other indicators of positive and negative development.

In terms of measurement invariance (i.e., assessing whether the PYD scale performed consistently across gender and age), metric and scalar invariance were observed across age groups, suggesting that the PYD measure functions similarly across younger and older adolescents. This supports previous research that illustrated measurement invariance of the Five Cs model over an eight-year longitudinal study (Geldhof et al., 2013), and illustrates that the Five Cs model is a conceptually framework of positive functioning across adolescence.

While previous research examined the age invariance of the Five Cs model of PYD (e.g., Geldhof et al., 2013), no research has assessed the functioning of the Five Cs model across gender. The current study observed metric and partial scalar invariance across males and females. This indicates that, while the indicators of each of the “Cs” function the same for males and females (i.e., metric invariance), a number of indicators differed in terms of the level of scoring. Most notably, all indicators of the Caring factor were found to differ across gender. This suggests that differences in mean caring scores between genders may be biased due to males scoring on a lower range of scores. The result of this is that males and females may be equally empathetic, but females may score higher on the current measure due to starting off on a higher level of scoring in general. The finding of invariance at the metric (weak) level assures that comparisons can be made for the caring subscale as to the relationships between the factors (i.e., factor coefficients) across groups (Clench-Aas, Nes, Dalgard, & Aarø, 2011). Caution however, should be exercised in interpreting analyses involving comparison of latent means of caring between groups (Clench-Aas, Nes, Dalgard, & Aarø, 2011). On the other hand, the observed gender differences are in line with previous research showing females score higher on kindness (Linley et al., 2007) and empathy (e.g., Litvack-Miller et al., 1997; McMullin & Cairney, 2004; Moksnes et al., 2010).

Latent mean scores of PYD and the Five Cs were also assessed, and indicated a number of differences across groups. For instance, results indicated that females scored higher on the factors of caring, character and connection, while males scored higher on the factors of confidence and competence. This suggests that PYD may not manifest in a uniform manner across gender groups. These discrete differences between males and females on each of the Five Cs are in contrast to previous research that highlighted females scoring consistently higher on all Five Cs (Lerner

et al., 2008). However, the finding that females scored higher on caring, character, and connection, and lower on competence and confidence compared to males, is in line with previous research illustrating significant gender typing by adhering to gender-role standards of behaviour (Linley et al., 2007; McMullin & Cairney, 2004; Moksnes, Moljord, Espnes, & Byrne, 2010). Latent mean differences were also assessed across age groups. Younger adolescents were found to score higher on caring, character, connection, and overall PYD scores. This indicates that PYD appears to decline from younger adolescence to older adolescence. These results concur with the findings of Harter (1998), who reported that many of the domains of positive self-concept decrease over the early adolescence years. Thus, the current findings were consistent with predicted developmental outcomes.

In sum, the Five Cs model of PYD was found to be an adequate structural model to depict positive functioning in Irish adolescence. In general, the PYD subscales were related to measures of contribution and risky-behaviours in line with theoretically derived hypotheses, and the PYD subscales (with the exception of caring) were able to discriminate non-clinical (i.e., scores less than 16) and clinically significant depression scores (i.e., scores above 16). The Five Cs measure was also found to be a robust measure across younger and older adolescent age groups. Notably, a number of gender differences were observed, indicating that PYD may manifest differently across gender groups. Further theoretical and practical implications of these findings are discussed in Chapter 8.

**5.5.1 Limitations.** A number of limitations and concerns should be addressed. First, questions remain over the structure of the model. The modifications of the PYD model, including the shared variance between the first-order factors of caring and character, suggest that some of the C's may represent the same latent construct. Thus researchers need to continue to take care to examine the measurement properties of their PYD scale in each study where the measure is being used.

Additionally, the caring factor of PYD was consistent in its failure to significantly predict either contribution or risky-behaviours, and differentiate between groups of individuals with high and low depression scores. Given the low factor loading onto the PYD construct, and the shared variance with the character

construct, future research may look at the items used to assess caring in the model of PYD. Previous iterations of the Five Cs model have already changed the items used in the caring construct, changing the subscale from sympathy to empathy (Lerner et al., 2005; Phelps et al., 2009). The addition of further items assessing constructs related to empathy, and fitting within the definition of caring, may strengthen the caring factor. For example, the measurement of compassion is defined as being open to and moved by the suffering of others, desiring to ease suffering of others, and offering others patience and non-judgemental understanding (Neff, 2003; Sprecher & Fehr, 2005). While related to empathy (i.e., moved by the suffering of others), the measurement of compassion assesses additional individual motivations (e.g., offering non-judgemental understanding). Thus, the addition of compassion may strengthen the measurement of caring within a PYD framework. Further research is required to assess whether the current findings are replicated in order to support additional changes to the caring construct.

In conclusion, the present study provides support for the structure of the PYD model in an Irish context. In addition, the reliability and validity of the Five Cs Model of PYD is supported as the theoretically expected relations with positive (contribution) and negative (depression and risky-behaviour) indicators of development were generally observed. Therefore, the Five Cs model of PYD provides practitioners, parents, teachers and youth leaders, with both a common vocabulary to discuss healthy development, and a tool to measure PYD among adolescents. Furthermore, the stability of the five-factor model of PYD supports its use as a valid measure across adolescence. However, further research is needed to clarify the gender differences in a number of indicators. Notably, the results suggest that PYD is not a homogeneous construct for both males and females. Further work is necessary then to elucidate the underlying factors of PYD that could potentially inform youth programmes for both gender groups.

Overall, the present findings suggest that the Five Cs model of PYD is a suitable model of positive functioning among adolescents in Ireland, and that this measure is useful and valid in relation to understanding expected relationships with positive and negative developmental indices.

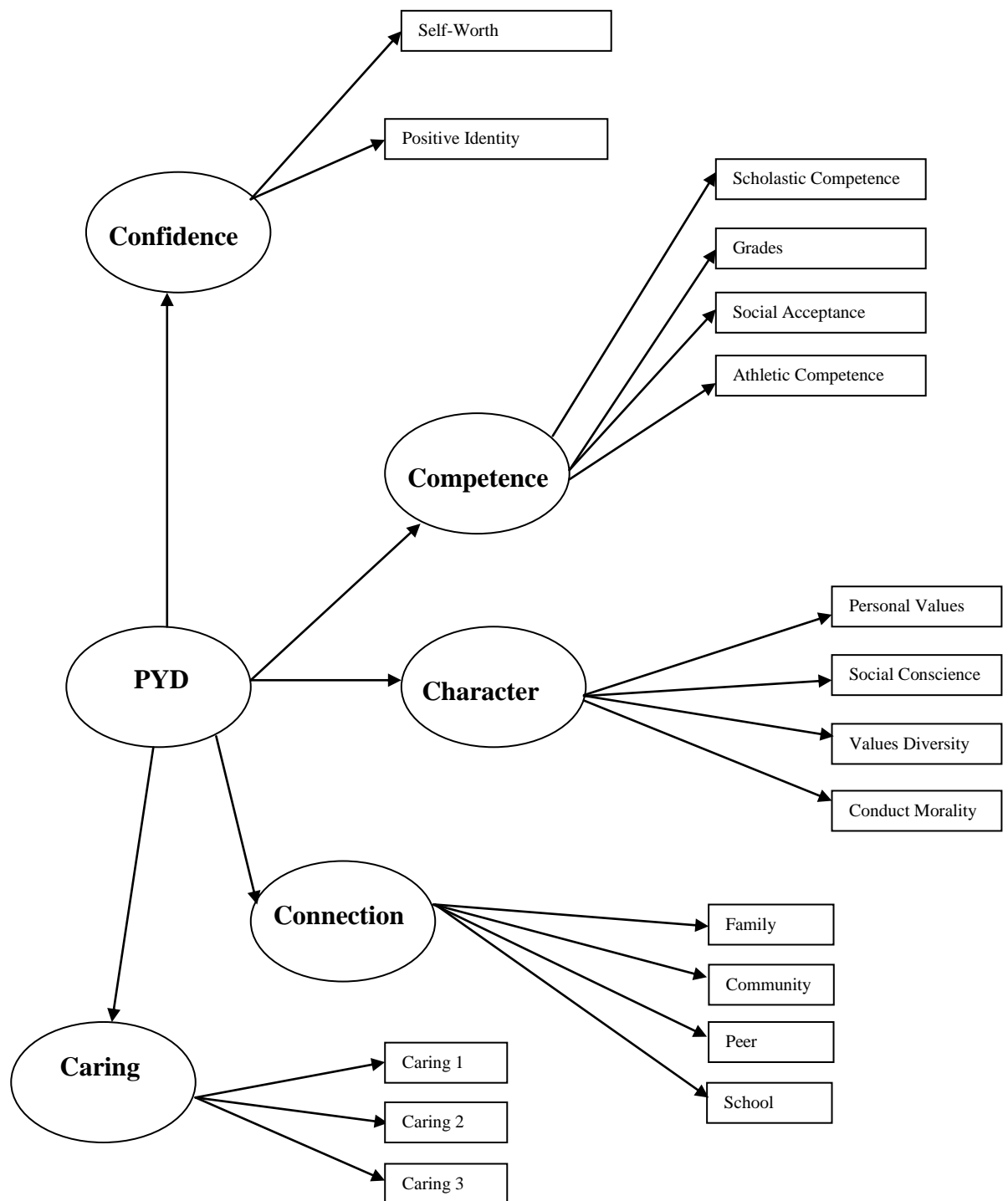


Figure 5.1

*5Cs Model of Positive youth Development* (Lerner et al., 2005).

Note: PYD = Positive youth development. Residual terms and covariances are omitted.

## 6. Chapter 6

### Study 2B: Testing the Adolescent Self-Regulation Model

#### 6.1 Chapter Overview

The purpose of this chapter is twofold: 1) to test the hypothesised relationships between predictor variables of prosocial prototypes, emotion regulation, peer influence, future orientation, and SOC, and positive (i.e., PYD and contribution) and negative (i.e., risk and depression) indices of development; and 2) to assess whether the proposed relationships differ between younger and older adolescents and across gender using multi-group analyses.

#### 6.2 Introduction

Ireland has one of the highest rates of young people not currently in education, employment or training (22%; Eurofound, 2012), high youth unemployment (26.3%; Eurostat, 2013) and worrying trends related to youth depression, alcohol consumption and suicide (My World, 2012; UNICEF, 2011; National Office for Suicide Prevention, 2012). At the same time, figures suggest that Irish people spend more time per day volunteering than the OECD average (Better Life Index, 2013), and four out of five Irish adolescents report being happy (UNICEF, 2011). Central to both positive and negative indices of adolescent development are the adolescents' developing regulatory abilities. This includes emotional, motivational and interpersonal regulatory abilities that are key to understanding adolescent regulation and agency (Larson, 2011).

As previously outlined, while intentional self-regulation has been proposed as the primary mechanism that determines adolescent development (e.g., Gestsdottir & Lerner, 2008), several concerns have been raised about the role of self-regulation in predicting positive youth development (PYD). For example, the relationship between SOC and positive and negative outcomes are weak; and social and emotional factors included in the definitions of self-regulation, and highlighted as of particular importance during adolescence, are omitted from the measure of intentional self-regulation (i.e., the SOC model). For instance, research has highlighted resistance to peer influence, future orientation, and emotion regulation as key social and emotional factors involved in self-regulation (Brandstädter, 2006;

Gardner et al., 2008; Steinberg & Cauffman, 1996). In addition, the values associated with goals are an essential part of adaptive self-regulatory behaviour (Miller & Byrnes, 2001).

It is hypothesised that respondents evidencing higher ratings of prosocial prototypes, adaptive emotion regulation, more autonomy from peer influence, and higher future orientation will report higher PYD and contribution, and lower depressive symptoms and risky-behaviours. By highlighting the factors of adolescent self-regulation that are important for PYD, this research can inform the development of future youth orientated programmes that aim to promote and sustain the healthy development of young people.

### 6.3 Method

**6.3.1 Participants.** The 672 adolescent respondents described in Study 2A were used in the current analyses.

#### 6.3.2 Data Screening.

**Tests of Normality and Outliers.** The measurement model included 16 latent variables, including the higher-order model of PYD (i.e., PYD, caring, character, competence, confidence, connection, self-regulation, resistance to peer influence, external-dysfunctional emotion regulation, external-functional emotion regulation, internal-dysfunctional emotion regulation, internal-functional emotion regulation, future orientation, depression, contribution and risk) and 100 indicator variables. The skewness and kurtosis values (skew range = 0.03 – 2.44; kurtosis range = -0.02 – 8.98) indicated that the data met the univariate normality guidelines of Weston and Gore (2006), as skewness values greater than 3 are considered ‘extreme’ (Chou & Bentler, 1995), while kurtosis values greater than 10 indicate significant departure from normality (Kline, 2005).

**6.3.3 Measures.** Descriptions of all measures are provided in Chapter 5 (see section 5.3). In this section, the measures used and reliability are outlined.

**Intentional Self-Regulation.** Intentional self-regulation was measured using the Selection, Optimisation, and Compensation (SOC) measure (Freund & Baltes, 2002). The composite reliability ( $\omega$ ; due to dichotomous items of the scale) of the



SOC measure was .76 for the current sample. A total SOC score based on the 11-items was used in all analysis.

***Prosocial prototypes.*** As outline in Section 3.6.2, prosocial prototypes were measured by asking participants to rate 12 characteristics associated with two prosocial behaviours (helping parents with chores and taking part in a youth group). The adjectives Smart, Kind, Sporty, Friendly, Disrespectful, Unattractive, Popular, Hardworking, Careless, Immature, Independent, and Boring were used, measured on a seven-point likert scale ranging from 1 (Not at all) to 7 (extremely). In order to ascertain overall prosocial prototype scores on the two factors of prosocial prototypes (i.e., positive prototype and negative prototype; Study 1C), the scores on each characteristic were averaged across both prosocial images in order to derive overall positive prototype and negative prototype factor scores. The internal reliability for both the positive prototype ( $\alpha = .82$ , 95% CI = .80 – .84) and the negative prototype factors ( $\alpha = .80$ , 95% CI = .77 – .82) were good.

***Peer influence.*** Peer influence was measured using the resistance to peer influence (RPI) measure developed by Steinberg and Monahan (2007). The reliability ( $\alpha$ ) of the RPI measure was .67 (95% CI = .63 – .71) for the current sample.

***Emotion regulation.*** Emotion Regulation was measured using the Regulation of Emotions Questionnaire (REQ; Phillips & Power, 2007). The internal reliability of the REQ subscales were .73 (95% CI = .70 – .76; External-Dysfunctional), .77 (95% CI = .74 – .80; External-Functional), .53 (95% CI = .47 – .59; Internal-Dysfunctional), and .74 (95% CI = .71 – .77; Internal-Functional) in the current sample.

***Future orientation.*** Future Orientation was measured using the *Future Orientation Inventory* (FOI; Cauffman & Woolard, 1999). The internal reliability of the FOI measure is .67 (95% CI = .62 – .71) in the current sample.

***Positive youth development.*** Positive Youth Development was measured using the Five Cs measure of PYD for Grade 8-12 (approximately 13-17 years; Lerner et al., 2005; Phelps et al., 2009). Subscale reliability ( $\alpha$  ranging from .45 to .75) is reported in Chapter 5.

**Depression.** Depression was measured by the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Cronbach's alpha for the current sample was 0.88 (95% CI = .87 – .89) for depressed affect, 0.70 (95% CI = .67 – .74) for somatic complaints, 0.76 (95% CI = .73 – .79) for positive affect, and inter-item correlation for interpersonal problems was .54.

**Contribution.** Contribution was measured using two equally weighted subscales of ideology and actions derived by Lerner and colleagues (2005). In the current study Cronbach's alpha was .76 (95% CI = .73 – .79).

**Risky-behaviours.** Risk behaviours were measured using scales of substance use and delinquency derived from the PSL-AB and the Monitoring the Future (2000) questionnaires. Cronbach's alpha for the current study was 0.71 (95% CI = .68 – .74) for the substance use subscale, and 0.57 (95% CI = .52-.62) for the delinquency subscale.

**6.3.4 Procedure.** The procedure for data collection is outlined previously in section 4.7. Data were analysed using PASW 20.0 and MPlus 7.1 (Muthen & Muthen, 2011).

## 6.4 Results

**6.4.1 Descriptive Statistics.** Reliability coefficients (and confidence intervals), means, standard deviations and scale score ranges for the self-report measures are presented in Table 6.1. Pearson Product Correlations among the variables included in the current study are presented in Table 6.2.

Consistent low to moderate correlations were observed between SOC (total SOC and subscale scores) and total PYD and PYD subscale scores ( $r$  range = -.04 to .35). Similar relationships were found for resistance to peer influence ( $r$  range = .16 to .33) future orientation ( $r$  range = .10 to .29), across both prototype factors ( $r$  range = -.06 to .46), and across four emotion regulation subscales ( $r$  range = -.02 to .45). All significant correlations were in the anticipated directions (e.g., dysfunctional emotion regulation negatively associated with PYD). A summary of correlations are provided in Table 6.2.

In line with guidelines for two-step modelling (Kline, 2005), the structural regression models are first specified as measurement models, then structural components are investigated.

Table 6.1

*Descriptive Statistics for all Measures in Study 2B (N = 672)*

Variable	M	SD	$\alpha$	95% CI	Possible Range	Attained Range	Skew	Kurtosis
SOC – Total	6.36	2.23	.76 <sup>a</sup>	-	0-11	0-11	-0.14	-0.49
RPI	2.71	0.48	.67	.63-.71	1-4	1.3-4	-0.27	-0.02
Ext-Dys	1.71	0.59	.73	.70-.76	1-5	1-5	1.31	2.57
Ext-Fun	2.90	0.79	.77	.74-.80	1-5	1-5	0.24	-0.37
Int-Dys	2.15	0.72	.53	.47-.59	1-5	1-4.80	0.68	0.36
Int-Fun	2.92	0.72	.74	.71-.77	1-5	1-5	-0.03	0.07
Prototype –Positive	4.32	0.69	.82	.80-.84	1-7	0.86-6.00	-0.46	1.11
Prototype –Negative	2.68	0.93	.80	.77-.82	1-7	1-6.70	0.31	0.60
FOI	2.36	0.49	.67	.62-.71	1-4	1-3.88	0.08	0.06
Caring	8.96	1.92	.78	.74-.81	0-12	2.33-12	-0.67	0.16
Character	8.00	1.76	.80	.78-.83	0-12	1.93-11.85	-0.45	0.11

Table 6.1

*Descriptive Statistics for all Measures in Study 2B continued*

Variable	M	SD	A	95% CI	Possible Range	Attained Range	Skew	Kurtosis
Competence	7.64	1.65	.67	.62-.71	0-12	2.10-12	-0.22	0.06
Confidence	7.75	2.17	.69 <sup>b</sup>	-	0-12	0-12	-0.40	0.02
Connection	8.24	1.73	.77	.74-.80	0-12	1.06-12	-0.60	0.66
PYD-Total	8.12	1.29	.73	.70-.77	0-12	3.86-11.58	-0.20	0.03
Depression	14.34	10.09	.90	.88-.91	0-60	0-53	1.28	1.50
Contribution	51.03	14.76	.76	.73-.79	0-100	14.58-93.75	0.17	-0.14
Risk	1.37	0.47	.77	.75-.80	1-5	1-4.64	2.44	8.98

*Note.* SOC-Total = Selection, Optimisation and Compensation 11-item score; RPI = Resistance to Peer Influence; Ext-Dys = External Dysfunctional Emotion Regulation; Ext-Fun = External Functional Emotion Regulation; Int-Dys = Internal Dysfunctional Emotion Regulation; Int-Fun = Internal Functional Emotion Regulation; FOI = Future Orientation Inventory; PYD = Positive Youth Development.

<sup>a</sup> = composite reliability ( $\omega$ ) computed due to dichotomous items of the scale; <sup>b</sup> = correlation coefficient; Cronbach's alpha does not make conceptual sense for two-item measures, hence, correlation coefficients were calculated (Streiner, 2003).

Table 6.2

*Summary of Correlations for Measures used in Study 2B*

Var	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1 Age	---																											
2 PYD	-.17 <sup>c</sup>	---																										
3 Car	-.05	.61 <sup>c</sup>	---																									
4 Char	-.17 <sup>c</sup>	.74 <sup>c</sup>	.56 <sup>c</sup>	---																								
5 Com	-.14 <sup>c</sup>	.60 <sup>c</sup>	.05	.19 <sup>c</sup>	---																							
6 Conf	-.09 <sup>a</sup>	.71 <sup>c</sup>	.10 <sup>a</sup>	.30 <sup>c</sup>	.54 <sup>c</sup>	---																						
7 Conn	-.17 <sup>c</sup>	.79 <sup>c</sup>	.32 <sup>c</sup>	.49 <sup>c</sup>	.41 <sup>c</sup>	.54 <sup>c</sup>	---																					
8 S	-.14 <sup>c</sup>	.10 <sup>b</sup>	-.04	.12 <sup>b</sup>	.07	.10 <sup>a</sup>	.12 <sup>b</sup>	---																				
9 O	-.17 <sup>c</sup>	.37 <sup>c</sup>	.12 <sup>a</sup>	.35 <sup>c</sup>	.26 <sup>c</sup>	.24 <sup>c</sup>	.33 <sup>c</sup>	.32 <sup>c</sup>	---																			
10 C	-.10 <sup>a</sup>	.29 <sup>c</sup>	.06	.20 <sup>c</sup>	.23 <sup>c</sup>	.24 <sup>c</sup>	.28 <sup>c</sup>	.19 <sup>c</sup>	.29 <sup>c</sup>	---																		
11 TSO	-.19 <sup>c</sup>	.35 <sup>c</sup>	.07	.31 <sup>c</sup>	.26 <sup>c</sup>	.27 <sup>c</sup>	.34 <sup>c</sup>	.71 <sup>c</sup>	.74 <sup>c</sup>	.70 <sup>c</sup>	---																	
12 RPI	.08 <sup>a</sup>	.33 <sup>c</sup>	.16 <sup>c</sup>	.33 <sup>c</sup>	.18 <sup>c</sup>	.27 <sup>c</sup>	.20 <sup>c</sup>	.03	.11 <sup>b</sup>	.04	.08 <sup>a</sup>	---																
13 EF	-.05	.41 <sup>c</sup>	.29 <sup>c</sup>	.33 <sup>c</sup>	.13 <sup>b</sup>	.21 <sup>c</sup>	.45 <sup>c</sup>	.07	.10 <sup>b</sup>	.30 <sup>c</sup>	.22 <sup>c</sup>	.11 <sup>b</sup>	---															
14 ED	.13 <sup>b</sup>	-.31 <sup>c</sup>	-.23 <sup>c</sup>	-.25 <sup>c</sup>	-.08 <sup>a</sup>	-.16 <sup>c</sup>	-.34 <sup>c</sup>	-.08 <sup>a</sup>	-.18 <sup>c</sup>	-.14 <sup>c</sup>	.19 <sup>c</sup>	-.14 <sup>c</sup>	-.10 <sup>a</sup>	---														
15 IF	.02	.37 <sup>c</sup>	.22 <sup>c</sup>	.37 <sup>c</sup>	.23 <sup>c</sup>	.18 <sup>c</sup>	.28 <sup>c</sup>	.09 <sup>a</sup>	.22 <sup>c</sup>	.15 <sup>c</sup>	.22 <sup>c</sup>	.07	.39 <sup>c</sup>	-.02	---													
16 ID	.06	-.29 <sup>c</sup>	.03	-.02	-.25 <sup>c</sup>	-.43 <sup>c</sup>	-.33 <sup>c</sup>	-.06	-.15 <sup>c</sup>	-.09 <sup>a</sup>	-.14 <sup>c</sup>	-.04	.00	.40 <sup>c</sup>	.16 <sup>c</sup>	---												
17 FOI	.06	.29 <sup>c</sup>	.10 <sup>b</sup>	.31 <sup>c</sup>	.16 <sup>c</sup>	.22 <sup>c</sup>	.22 <sup>c</sup>	.09 <sup>a</sup>	.18 <sup>c</sup>	.16 <sup>c</sup>	.20 <sup>c</sup>	.15 <sup>c</sup>	.26 <sup>c</sup>	.06	.41 <sup>c</sup>	.07	---											
18 Pos	-.07	.46 <sup>c</sup>	.39 <sup>c</sup>	.42 <sup>c</sup>	.16 <sup>c</sup>	.18 <sup>c</sup>	.42 <sup>c</sup>	.05	.19 <sup>c</sup>	.12 <sup>b</sup>	.16 <sup>b</sup>	.09 <sup>a</sup>	.35 <sup>c</sup>	-.17 <sup>c</sup>	.30 <sup>c</sup>	-.06	.12 <sup>b</sup>	---										

Table 6.2

*Summary of Correlations for Measures used in Study 2B continued.*

Var	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
19 Neg	.01	-.26 <sup>c</sup>	-.23 <sup>c</sup>	-.23 <sup>c</sup>	-.06	-.14 <sup>c</sup>	-.24 <sup>c</sup>	-.01	-.14 <sup>c</sup>	-.03	-.09 <sup>a</sup>	-.13 <sup>b</sup>	-.13 <sup>b</sup>	.22 <sup>c</sup>	-.05	.20 <sup>c</sup>	-.14 <sup>c</sup>	-.29 <sup>c</sup>	---									
20 DA	.09 <sup>a</sup>	-.35 <sup>c</sup>	.03	-.09 <sup>a</sup>	-.33 <sup>c</sup>	-.48 <sup>c</sup>	-.37 <sup>c</sup>	-.03	-.12 <sup>b</sup>	-.09 <sup>a</sup>	-.11 <sup>b</sup>	-.10 <sup>a</sup>	-.02	.29 <sup>c</sup>	-.02	.61 <sup>c</sup>	.05	-.10 <sup>b</sup>	.18 <sup>c</sup>	---								
21 SC	.05	-.22 <sup>c</sup>	.09 <sup>a</sup>	.03	-.26 <sup>c</sup>	-.36 <sup>c</sup>	-.29 <sup>c</sup>	-.08 <sup>a</sup>	-.12 <sup>b</sup>	-.11 <sup>b</sup>	-.15 <sup>c</sup>	-.05	.02	.22 <sup>c</sup>	.08 <sup>a</sup>	.51 <sup>c</sup>	.06	-.01	.15 <sup>c</sup>	.69 <sup>c</sup>	---							
22 PA	.06	-.56 <sup>c</sup>	-.17 <sup>c</sup>	-.27 <sup>c</sup>	-.47 <sup>c</sup>	-.60 <sup>c</sup>	-.45 <sup>c</sup>	-.08 <sup>a</sup>	-.19 <sup>c</sup>	-.21 <sup>c</sup>	-.23 <sup>c</sup>	-.15 <sup>c</sup>	-.30 <sup>c</sup>	.12 <sup>b</sup>	-.33 <sup>c</sup>	.26 <sup>c</sup>	-.25 <sup>c</sup>	-.29 <sup>c</sup>	.11 <sup>b</sup>	.46 <sup>c</sup>	.28 <sup>c</sup>	---						
23 IP	.09 <sup>a</sup>	-.42 <sup>c</sup>	-.02	-.14 <sup>c</sup>	.36 <sup>c</sup>	-.48 <sup>c</sup>	-.47 <sup>c</sup>	-.08 <sup>a</sup>	-.20 <sup>c</sup>	-.12 <sup>b</sup>	-.18 <sup>c</sup>	-.19 <sup>c</sup>	-.13 <sup>b</sup>	.22 <sup>c</sup>	-.03	.46 <sup>c</sup>	-.02	-.13 <sup>b</sup>	.23 <sup>c</sup>	.65 <sup>c</sup>	.54 <sup>c</sup>	.37 <sup>c</sup>	---					
24 Sub	.44 <sup>c</sup>	-.30 <sup>c</sup>	-.16 <sup>c</sup>	-.31 <sup>c</sup>	-.18 <sup>c</sup>	-.12 <sup>c</sup>	-.29 <sup>c</sup>	-.12 <sup>b</sup>	-.27 <sup>c</sup>	-.13 <sup>b</sup>	-.24 <sup>c</sup>	-.05	-.03	.38 <sup>c</sup>	-.04	.20 <sup>c</sup>	-.05	-.16 <sup>c</sup>	.11 <sup>b</sup>	.17 <sup>c</sup>	.13 <sup>b</sup>	.13 <sup>b</sup>	.07	---				
25 Delin	.04	-.32 <sup>c</sup>	-.27 <sup>c</sup>	-.28 <sup>c</sup>	-.12 <sup>b</sup>	-.11 <sup>b</sup>	-.34 <sup>c</sup>	.02	-.19 <sup>c</sup>	-.07	-.11 <sup>b</sup>	-.08 <sup>a</sup>	-.08 <sup>a</sup>	.51 <sup>c</sup>	-.04	.27 <sup>c</sup>	-.04	-.21 <sup>c</sup>	.24 <sup>c</sup>	.12 <sup>b</sup>	.05	.11 <sup>b</sup>	.07	.54 <sup>c</sup>	---			
26 Lead	.08 <sup>a</sup>	.17 <sup>c</sup>	.00	.07	.30 <sup>c</sup>	.13 <sup>b</sup>	.12 <sup>b</sup>	.03	.11 <sup>b</sup>	.05	.08 <sup>a</sup>	.08 <sup>a</sup>	.16 <sup>c</sup>	.04	.24 <sup>c</sup>	-.02	.20 <sup>c</sup>	.14 <sup>c</sup>	.01	-.05	.01	-.22 <sup>c</sup>	.00	.02	.00	---		
27 Serv	-.01	.26 <sup>c</sup>	.14 <sup>c</sup>	.27 <sup>c</sup>	.25 <sup>c</sup>	.06	.20 <sup>c</sup>	.05	.18 <sup>c</sup>	.15 <sup>c</sup>	.17 <sup>c</sup>	.05	.22 <sup>c</sup>	.02	.27 <sup>c</sup>	.10 <sup>b</sup>	.15 <sup>c</sup>	.18 <sup>c</sup>	.03	.07	.13 <sup>b</sup>	-.17 <sup>c</sup>	.04	-.04	-.10 <sup>a</sup>	.39 <sup>c</sup>	---	
28 Help	-.11 <sup>b</sup>	.40 <sup>c</sup>	.33 <sup>c</sup>	.37 <sup>c</sup>	.15 <sup>c</sup>	.13 <sup>b</sup>	.42 <sup>c</sup>	.03	.19 <sup>c</sup>	.16 <sup>c</sup>	.18 <sup>c</sup>	.15 <sup>c</sup>	.38 <sup>c</sup>	-.19 <sup>c</sup>	.27 <sup>c</sup>	.02	.23 <sup>c</sup>	.30 <sup>c</sup>	.16 <sup>c</sup>	-.05	.03	-.19 <sup>c</sup>	-.08 <sup>a</sup>	-.13 <sup>b</sup>	-.19 <sup>c</sup>	.16 <sup>c</sup>	.28 <sup>c</sup>	---
29 Ideol	-.05	.50 <sup>c</sup>	.44 <sup>c</sup>	.57 <sup>c</sup>	.15 <sup>c</sup>	.12 <sup>b</sup>	.43 <sup>c</sup>	.01	.22 <sup>c</sup>	.16 <sup>c</sup>	.18 <sup>c</sup>	.17 <sup>c</sup>	.34 <sup>c</sup>	-.23 <sup>c</sup>	.34 <sup>c</sup>	.03	.31 <sup>c</sup>	.35 <sup>c</sup>	.21 <sup>c</sup>	-.06	.00	-.22 <sup>c</sup>	-.06	-.14 <sup>b</sup>	-.23 <sup>c</sup>	.17 <sup>c</sup>	.34 <sup>c</sup>	.53 <sup>c</sup>

*Note.* Var = variables; PYD = Positive Youth Development; Car = Caring; Char = Character; Com = Competence; Conf = Confidence; Conn = Connection; S = Selection; O = Optimisation; C = Compensation; TSO = Total Selection, Optimisation and Compensation (SOC) 11-item scale score; RPI = Resistance to Peer Influence; EF = External Functional Emotion Regulation; ED = External Dysfunctional Emotion Regulation; IF = Internal Functional Emotion Regulation; ID = Internal Dysfunctional Emotion Regulation; FOI = Future Orientation Inventory; Pos = Positive Prototype; Neg = Negative Prototype; DA = Depressed affect; SC = somatic complaints; PA = Positive Affect; IP = Interpersonal problems; Sub = Substance use; Delin = Delinquency; Lead = Leadership; Serv = Service; Help = Helping; and Ideol = Ideology. Statistical significance: <sup>a</sup> =  $p < .05$ ; <sup>b</sup> =  $p < .01$ ; <sup>c</sup> =  $p < .001$

**6.4.2 The Measurement Model.** Independent confirmatory factor analyses (CFA) were run on each of the variables (i.e., the PYD model [ see Chapter 5], SOC, resistance to peer influence, emotion regulation [i.e., external-dysfunctional, external-functional, internal-dysfunctional and internal-functional emotion regulation], prosocial prototypes, future orientation, depression, contribution and risky-behaviours) prior to inclusion in the measurement model. The CFA of individual measures are delineated below.

***Intentional Self-Regulation.*** A confirmatory factor analysis (CFA) approach was used to assess the factor structure of the Selection, Optimisation, and Selection (SOC) model using Mplus 7.1 (Muthén & Muthén, 2011). Due to the dichotomous items in the SOC model, a matrix of tetrachoric correlations was analysed with the weighted least-squared method of estimation on tetrachoric correlation and asymptotic covariance matrices, as recommended for models that consist of dichotomous variables (Joreskog & Sorbom, 1996). Previous research has proposed a 24-item four-factor SOC model (including loss-based selectivity factor; Freund & Baltes, 2002), an 18-item three-factor SOC model (Freund & Baltes, 2002; Gestsdóttir & Lerner, 2007), and a nine-item one-factor SOC model (Gestsdóttir & Lerner, 2007). However, as the factor loss-based selection was conceptualised as an aspect of self-regulation for older adults (Freud & Baltes, 2002), and the developmental status of the participants in the current study may not tap into a construct assessing decline or loss of previous levels of functioning, this factor was omitted. The nine-item one-factor SOC model was derived from initial analyses of the 18-item three-factor SOC model (Gestsdóttir & Lerner, 2007). Items were removed based on low item-total score correlations. Given the lack of theoretical justification for the nine-item model, the current study subjected the 18-item three-factor SOC model to CFA.

The 18-item three-factor SOC model was a poor fit to the data,  $\chi^2 = 487.06$ ,  $df = 132$ ,  $p < .001$ , CFI = .67, TLI = .61, RMSEA = .063 (90% CI = .057 - .069). Two items were found to display non-significant factor loadings; Selection item 1 (I concentrate all my energy on a few things), and optimisation item 2 (When I want to do something difficult, I wait for the right moment and the best opportunity). In addition, a number of items were found to have low factor loadings indicating these items did not explain a meaningful amount of variance. Thus, in line with



guidelines, factor loadings less than 0.32 were removed (Worthington & Whittaker, 2006). Furthermore, modification indices indicated item *Selection 3* (I always focus on the one most important goal at a given time) cross-loaded significantly onto the optimisation and compensation factors, and was therefore removed. Modification indices also suggested a covariance between *Selection item 2* (I consider exactly what is important to me) and *Optimisation item 3* (I think about exactly how I can best carry out my plans). As these items appear to be conceptually similar (i.e., representing consideration of options or goals), this covariance was added to the model.

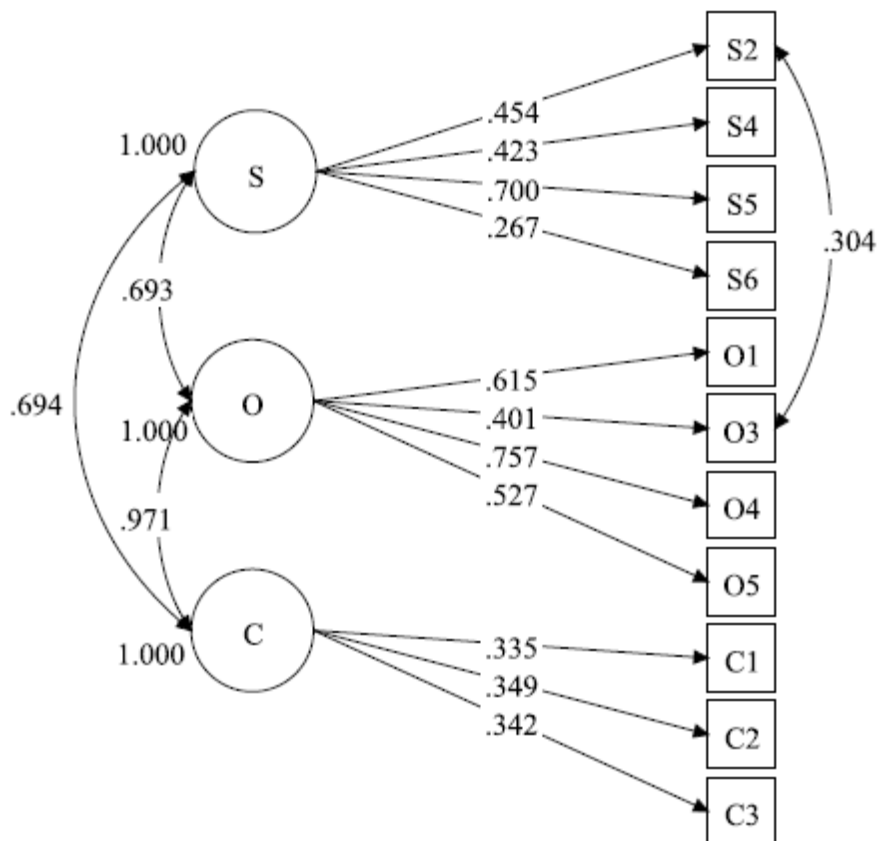


Figure 6.1

*Final 11-item three-factor SOC model with standardised factor loadings and covariances using time 1 data*

The final 11-item model (Selection = 4 items; Optimisation = 4 items; Compensation = 3 items) was a good fit,  $\chi^2 = 85.97$ ,  $df = 40$ ,  $p < .001$ , CFI = .93, TLI = .90, RMSEA = .041 (90% CI = .029 - .053). See Figure 6.1. The standardised factor-loadings ranged from .27 – .76 (see Table 6.3), with  $R^2$  ranging from .07-.57.

Average inter-item correlations were .21 for the Selection subscale (range = .11-.33), .33 for the Optimisation subscale (range = .21-.47), and .13 for the compensation subscale (range = .12-.16). Item variances for the Selection subscale ranged from 0.51 to 0.93 ( $M = 0.76$ ), for the Optimisation subscale ranged from 0.43 to 0.84 ( $M = 0.65$ ), and for the Compensation subscale ranged from 0.87 to 0.88 ( $M = 0.88$ ).

Covariances between the three revised subscales for the SOC model were moderate to high (see Figure 6.1). For instance, the covariance between selection and both optimisation and compensation were .69, indicating the factors measured interrelated, but distinct, constructs. For example an adolescent may use selection goal-directed strategies but not optimisation or compensation. Notably, the covariance between optimisation and compensation was high ( $r = .97$ ). This suggests that for Irish adolescents, there may be a significant conceptual overlap between the optimisation and compensation factors. However, a two-factor model did not display an improvement in model fit,  $\chi^2_{(2)} = 0.49$ ,  $p > .05$ , and fit indices were not substantially different (CFI = .93, TLI = .91, RMSEA = .039 [90% CI = .027 - .051])<sup>15</sup>. Due to the theoretical conceptualisation of SOC as a three-factor model, and the lack of improvement in model fit when stipulating a two-factor model, the three-factors are retained for further analyses.

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<sup>15</sup> Indices used to make decisions on model comparisons, such as AIC and/or BIC, are not available in Mplus 7.1 output when using a weighted-least-squares estimator (i.e., when analysing binary data).

Table 6.3

*Standardised and unstandardised factor loadings (and standard errors) for the 11-item SOC measure.*

Item		$\beta$	B	SE
Selection				
Item 2	I consider exactly what is important to me	.45	1.00	-
Item 12	When I think about what I want in life, I commit myself to one or two important goals	.42	0.93	.20
Item 13	When I decide upon a goal, I stick to it	.70	1.54	.29
Item 18	I always pursue goals one after the other	.27	0.59	.17
Optimisation				
Item 3	I keep trying as many different possibilities as are needed to succeed at my goal	.62	1.00	-
Item 7	I think about exactly how I can best carry out my plans	.40	0.65	.12
Item 8	I make every effort to reach a given goal	.76	1.23	.15
Item 10	When I have started something that is important to me, but has little chance at success, I make more of an effort	.53	0.86	.13
Compensation				
Item 4	When something does not work out as well as before, I get advice from experts or read books	.34	1.00	-
Item 5	For important things, I pay attention to whether I need to spend more time or effort at it	.35	1.04	.28
Item 9	When things aren't going so well, I accept help from others	.34	1.02	.27

*Note.* All factor loadings were significant at the  $p < .001$  level.

*Reliability Tests for the SOC Scale.* Reliability analyses typically utilise Cronbach's alpha for calculating the reliability for continuous data. The Kuder-Richardson Formula 20 (KR-20; Kuder & Richardson, 1937) is the equivalent for scales with dichotomous items. However, it has recently come to light that two important limitations are overlooked when using Cronbach's alpha/KR-20 with dichotomous data (Napolitano et al., 2013). Firstly, computing Cronbach's alpha/KR-20 involves computations using raw covariances that assume a binomial distribution for dichotomous data. However, when handling dichotomous data such as the SOC items that represent normally-distributed item true scores, it is more appropriate to compute reliability using a tetrachoric correlation matrix. A tetrachoric correlation is a type of correlation that can be used when the items are dichotomous in order to provide a maximum likelihood estimate of the Pearson  $r$  (Olsson, 1979). Secondly, the calculations are based on essential tau-equivalence (assumption that all items are equally good representations of a scale's underlying latent construct). This is rarely tenable in the social sciences, therefore results in a lower-bound estimate of reliability. An alternative approach to measuring the reliability of dichotomous data is to compute the composite reliability ( $\omega$ ; McDonald, 1999), which is calculated using factor analysis and is proposed as superior to Cronbach's alpha/KR-20 (Napolitano et al., 2013).

*Calculating Composite Reliability ( $\omega$ ).* The composite reliability can be calculated by the formula;  $\omega = (\sum \lambda)^2 / (\sum \lambda)^2 + \sum \theta$ , where the numerator represents the scale score's true score variance and the denominator represents the total variance of the unit-weighted scale score (McDonald, 1999). As the composite reliability estimation is based on the true score variance of items, it is calculated using factor analysis. In addition, the SOC data is dichotomous, therefore, it is best assessed using a weighted-least squares-based (WLS) estimator and parameter estimates based on the tetrachoric correlation matrix (Napolitano et al., 2013; Rhemtulla, Brosseau-Liard, & Savalei, 2012). To calculate reliability of the SOC model, a three latent factor CFA model of the 11-item SOC factor using the WLSMV estimator and tetrachoric correlation matrix was used. After calculating the formula outlined above, the sum of factor loadings squared was divided by the sum of factor loadings squared plus the sum of residuals. This gave a composite reliability of 0.76. This is significantly higher than the Cronbach's alpha calculated

using raw covariances ( $\alpha = .57$ ). This is in line with previous research comparing both approaches (Napolitano et al., 2013). While Cronbach's alpha provides a lower-bound estimate of reliability by assuming tau-equivalence, composite reliability provides the most accurate representation of the internal reliability of a construct with dichotomous data. Therefore, the SOC 11-item model is found to be internally reliable. Overall, these findings suggest an acceptable fit between the three-factor structure SOC model and the current adolescent sample.

***Resistance to Peer Influence.*** A CFA analysis was conducted on the Resistance to Peer Influence (RPI) scale in order to confirm its one-factor structure. This model resulted in a poor fit to the data,  $\chi^2_{(35)} = 270.04, p < .001$ , CFI = .71, TLI = .63, RMSEA = .100 (90% CI = .089 - .111), SRMR = .06, AIC = 17920.58.

Modification indices suggested the addition of two covariances. First, item two ("some people think it's more important to be an individual than to fit in with the crowd") and item nine ("some people think it's better to be an individual even if people will be angry at you for going against the crowd") were suggested to covary. These two items appear to represent the construct of importance of individuality. In addition, item four ("some people would do something that they knew was wrong just to stay on their friend's good side) and item six ("other people would break the law if their friends said that they would break it") were suggested to covary. These items appeared to both represent resistance to rule breaking. Thus, the items were therefore allowed to covary. Subsequent fit indices including the two covariances indicated a good fit to the data,  $\chi^2_{(33)} = 88.36, p < .001$ , CFI = .94, TLI = .91, RMSEA = .048 (90% CI = .036 - .061), SRMR = .03, AIC = 17738.89. Standardised factor loadings ranged from low to moderate (.18 - .66), with inter-item correlations ranging from .04 to .53. Reliability was satisfactory (Cronbach's alpha = .67), therefore the RPI scale was used in subsequent analyses as a measure of resistance to peer influence.

***Emotion Regulation.*** A CFA analysis was conducted on the Emotion Regulation (ER) scale in order to confirm its four-factor structure. This model resulted in a poor fit to the data,  $\chi^2_{(183)} = 1051.50, p < .001$ , CFI = .78, TLI = .75, RMSEA = .084 (90% CI = .079 - .089), SRMR = .07, AIC = 36144.89.

Inspection of the modification indices suggested that a number of items warranted deletion. For instance, item 6 (“I do something energetic”) was removed due to low-factor loading (.11), while item 3 (“I seek physical contact from friends or family”), item 7 (“I dwell on my thoughts and feelings”), and item 15 (“I keep the feeling locked up inside”), were found to display significant cross-loading onto other factors and items and subsequently removed. In addition, two pairs of items were allowed covary; items 20 and 21 (“I telephone friends or family” and “I go out and do something nice”) which both appear to represent active coping strategies, and items 2 and 10 (“I take my feelings out on others verbally” and “I take my feelings out on others physically”), which represent forms of aggression. Ultimately, 17 items were retained, with a good fit to the data,  $\chi^2_{(111)} = 345.32$ ,  $p < .001$ , CFI = .92, TLI = .90, RMSEA = .056 (90% CI = .049 - .063), SRMR = .05, AIC = 28088.58. The standardised factor-loadings ranged from .43 – .81, with  $R^2$  ranging from .18-.65.

Average inter-item correlations were .46 for the External-functional subscale (range = .35-.65), .35 for the External-dysfunctional subscale (range = .25-.50), .37 for the Internal-functional subscale (range = .23-.50), and .28 for the Internal-dysfunctional subscale (range = .25-.33). Item variances for the External-functional subscale ranged from 0.35 to 0.81 ( $M = 0.56$ ), for the External-dysfunctional subscale ranged from 0.54 to 0.80 ( $M = 0.65$ ), for the Internal-functional subscale ranged from 0.48 to 0.82 ( $M = 0.62$ ), and for the Internal-dysfunctional subscale ranged from 0.65 to 0.79 ( $M = 0.71$ ).

Inter-factor correlations between the emotion regulation (ER) subscales were low to moderate, ranging from .00 (External-functional and Internal-dysfunctional) to .65 (External-dysfunctional and Internal-dysfunctional). Both the functional subscales (Internal-functional and External-dysfunctional;  $r = .52$ ,  $p < .001$ ) and the dysfunctional subscales (Internal-functional and External-functional;  $r = .65$ ,  $p < .001$ ) were significantly positively correlated. Notably, the internal-functional and internal-dysfunctional subscales were also significantly positively correlated ( $r = .31$ ,  $p < .001$ ), indicating the more frequent internal-functional emotion regulation strategies were used (e.g., “I concentrate on a pleasant activity”), the more frequent internal-dysfunctional emotion regulation strategies were used (e.g., “I dwell on my thoughts and feelings”). This relationship was not found between external-

functional and external-dysfunctional subscales, where higher frequency of external-functional strategies (e.g., “I ask others for advice”) was negatively associated with external-dysfunctional regulation strategies (e.g., “I take my feelings out on others verbally”;  $r = -.13, p < .05$ ).

Internal reliability of the ER subscales was also assessed. Cronbach’s alpha ranged from .54 (Internal-dysfunctional) to .77 (External-functional). The low reliability of the internal-dysfunctional subscale may be due to the low number of items (i.e., 3 items). Low internal reliability is often found in scales with a low number of items (Nunnally & Bernstein, 1994). Given the overall good model fit, the four ER subscales were used in subsequent analyses as a measure of emotion regulation.

***Future Orientation.*** A CFA analysis was conducted on the Future Orientation Inventory (FOI) measure in order to confirm its one-factor structure. This model resulted in a poor fit to the data,  $\chi^2_{(20)} = 145.29, p < .001$ , CFI = .79, TLI = .70, RMSEA = .097 (90% CI = .082 - .112), SRMR = .06, AIC = 13254.69.

Inspection of the modification indices suggested that item 8 (“I usually think about the consequences before I do something”) was problematic, with several high cross-loadings. The removal of this item resulted in an excellent fit,  $\chi^2_{(14)} = 34.14, p = .002$ , CFI = .95, TLI = .93, RMSEA = .046 (90% CI = .027 - .066), SRMR = .03, AIC = 11498.86. The chi-square test was statistically significant,  $\chi^2_{(14)} = 111.15, p < .001$ , demonstrating a significant improvement in model fit. Factor loadings were low to moderate (.24 - .62), with inter-item correlations ranging from .10 to .34 ( $M = .20$ ). Internal reliability was below the recommended cutoff criteria of .70 (Field, 2009; Cronbach’s alpha = .63, 90% CI = .58-.67). However, given that the upper confidence interval is close to the recommended cutoff criteria, the excellent fit of the model, and the consideration of latent variables as error free (Shevlin, 2009), the use of the FOI measure in subsequent analyses is deemed appropriate.

***Prosocial Prototypes.*** A CFA analysis was conducted on the two-factor prosocial prototype measure. This model resulted in a poor fit to the data,  $\chi^2_{(53)} = 422.80, p < .001$ , CFI = .86, TLI = .83, RMSEA = .102 (90% CI = .093 - .111), SRMR = .06, AIC = 23314.80.

Looking at the modification indices, a number of covariances were suggested (e.g., boring and popular; careless and immature; sporty and kind; unattractive and popular). The final model showed an excellent fit;  $\chi^2_{(42)} = 153.94$ ,  $p < .001$ , CFI = .96, TLI = .93, RMSEA = .063 (90% CI = .052 - .074), SRMR = .04, AIC = 23067.93. The chi-square test was statistically significant,  $\chi^2_{(11)} = 268.86$ ,  $p < .001$ , demonstrating a significant improvement in model fit.

Factor loadings were moderate (.50 -.79), with inter-item correlations ranging from .23 to .59 ( $M = .40$ ) for the positive prototype factor, and .32 to .56 ( $M = .45$ ) for the negative prototype factor. Item variance ranged from 0.53 to 1.22 for the positive prototype factor ( $M = .77$ ), and from 0.39 to 1.20 for the negative prototype factor ( $M = .86$ ). Inter-factor correlations illustrated a significant negative correlation between the positive and negative prototype factors ( $r = -.35$ ,  $p < .001$ ). This suggests that the two factors represent related, but distinct aspects of prosocial prototype values.

Internal reliability for both prosocial prototype factors was good (positive prototype  $\alpha = .82$ ; negative prototype  $\alpha = .80$ ). Thus, the prosocial prototype measure was used in subsequent analyses.

**Depression.** A CFA analysis was conducted on the Centre for Epidemiological studies – Depression Scale (CES-D) in order to confirm its four-factor structure (i.e., depressed affect [7-items], somatic complaints [7-items], positive affect [4-items], and interpersonal problems [2-items]). This model resulted in a poor fit to the data,  $\chi^2_{(164)} = 787.77$ ,  $p < .001$ , CFI = .88, TLI = .86, RMSEA = .075 (90% CI = .070 - .081), SRMR = .05, AIC = 28247.49.

Modification indices indicated that five pairs of items should be covaried: items 9 and 10 (“I thought my life had been a failure” and “I felt fearful”); items 17 and 18 (“I had crying spells” and “I felt sad”); items 4 and 12 (“I felt that I was just as good as other people” and “I was happy”); items 2 and 20 (“I did not feel like eating; my appetite was poor”); and items 4 and 19 (“I felt that I was just as good as other people” and “I felt that people dislike me”). These items appeared to be thematically related, thus providing theoretical justification for the addition of the covariances.



Fit indices for the 20-item model, with four covariances, resulted in a good fit,  $\chi^2_{(159)} = 604.89$ ,  $p < .001$ , CFI = .91, TLI = .90, RMSEA = .065 (90% CI = .059 - .070), SRMR = .05, AIC = 28074.60. The chi-square test was statistically significant,  $\chi^2_{(5)} = 182.88$ ,  $p < .001$ , demonstrating that the addition of the covariances significantly improved the model fit. The standardised factor-loadings ranged from .35 – .78, with  $R^2$  ranging from .12-.63.

Average inter-item correlations were .48 for the depressed affect subscale (range = .41-.63), .26 for the somatic complaints subscale (range = .12-.43), .45 for the positive affect subscale (range = .34-.59), and .54 for the interpersonal problems subscale. Item variances for the depressed affect subscale ranged from 0.48 to 0.68 ( $M = 0.60$ ), for the somatic complaints subscale ranged from 0.49 to 0.86 ( $M = 0.71$ ), for the positive affect subscale ranged from 0.64 to 0.95 ( $M = 0.79$ ), and for the interpersonal problems subscale ranged from 0.56 to 0.71 ( $M = 0.64$ ).

Inter-factor correlations between the depression subscales were moderate to high, ranging from .44 (somatic complaints and positive affect) to .87 (depressed affect and somatic complaints). The average inter-factor correlation was .67. This suggests that the four depression factors represent inter-related, but distinct aspects of depression.

Internal reliability of the depression subscales was also assessed. Cronbach's alpha was good, ranging from .70 (somatic complaints) to .88 (depressed affect), with a moderate correlation between the two "interpersonal problem" subscale items ( $r = .54$ ). Thus, the depression scale was used in subsequent analyses.

**Risky-Behaviours.** The measure of risky-behaviours consisted of a number of items derived from scales of substance use and delinquency from the PSL-AB and the Monitoring the Future (2000) questionnaires. A CFA analysis was conducted to confirm the two-factor structure of risky-behaviours (i.e., 4 substance use items; 7 delinquency items). This model resulted in a poor fit to the data,  $\chi^2_{(42)} = 320.33$ ,  $p < .001$ , CFI = .86, TLI = .81, RMSEA = .099 (90% CI = .089 - .110), SRMR = .06, AIC = 17463.30.

Looking at the results of the CFA, two items displayed low standardised factor loading (i.e.,  $< .30$ ). These were item nine ("How many times have you hit or

beat up someone?”) and item 10 (“How many times have you taken part in a fight where a group of your friends were against another group?”). These items were subsequently removed. In addition, modification indices suggested two pairs of covariances; items one and two (“How many times, if any, have you smoked cigarettes?” and “How many times, if any, have you drank alcohol?”); and items three and seven (“How many times, if any, have you used illegal drugs?” and “How many times, if any, have you been on detention at school?”). As these items are thematically related, the covariances were added.

The subsequent model resulted in an adequate fit to the data,  $\chi^2_{(24)} = 110.02$ ,  $p < .001$ , CFI = .95, TLI = .92, RMSEA = .073 (90% CI = .060 - .087), SRMR = .03, AIC = 13404.46. The chi-square test was statistically significant,  $\chi^2_{(18)} = 137.45$ ,  $p < .001$ , demonstrating that the removal of item nine and item 10 significantly improved the model fit.

The standardised factor-loadings factor ranged from .46 – .85 for the substance use subscale, and .46 – .56 for the delinquency subscale, with  $R^2$  ranging from .21-.72 for substance use and .23-.40 for delinquency. Inter-item correlations ranged from .23 to .59 ( $M = .53$ ) for substance use, and .20 to .35 ( $M = .33$ ) for delinquency. Item variance ranged from 0.23 to 3.21 for the substance use factor ( $M = 1.31$ ), and from 0.20 to 1.34 for the delinquency factor ( $M = 0.70$ ). Inter-factor correlations illustrated a significant positive correlation between the substance use and delinquency factors ( $r = .91$ ,  $p < .001$ ). This suggests that the two risk factors represent highly-related aspects of risky-behaviours. However, a uni-dimensional model fit the data significantly worse compared to the two-factor risky-behaviours model,  $\chi^2_{(2)} = 50.99$ ,  $p < .001$ . Therefore the two-factor model of risky-behaviours was retained.

Internal reliability for the substance use factor was good ( $\alpha = .71$ ). However, Cronbach’s alpha for the delinquency subscale was low ( $\alpha = .54$ ). However, given the good fit of the model, and the consideration of latent variables as error free (Shevlin, 2009), the delinquency subscale was retained. Thus, the risky-behaviours measure was used in subsequent analyses.

**Contribution.** The measure of contribution was created by Lerner and colleagues (2005) and assessed four subscales; leadership (1-item), service (4-items),

helping (2-items), and ideology (6-items). A CFA analysis was conducted to confirm the four-factor structure of contribution. This model resulted in a poor fit to the data,  $\chi^2_{(60)} = 314.38$ ,  $p < .001$ , CFI = .83, TLI = .78, RMSEA = .079 (90% CI = .071 - .088), SRMR = .05, AIC = 26306.03.

Looking at the results of the CFA, all items displayed satisfactory standardised factor-loadings (i.e.,  $> .30$ ). Thus, modification indices were assessed. A number of covariances were suggested. For example, item eight and item nine (“I often think about doing things so that people in the future can have things better”; and “It is important to me to contribute to my community and society”); item 10 and item 11 (“It’s not really my problem if my neighbours are in trouble and need help”; and “If I had to choose between helping to raise money for a neighbourhood project and enjoying my own free time, I’d keep my freedom”); and item six and seven (“Being involved in community service”; and “Being involved helping other people”). As the items were thematically related, the covariances were added to the model.

The subsequent model resulted in an adequate fit to the data,  $\chi^2_{(57)} = 176.83$ ,  $p < .001$ , CFI = .92, TLI = .89, RMSEA = .056 (90% CI = .047 - .065), SRMR = .03, AIC = 26174.48. The chi-square test was statistically significant,  $\chi^2_{(3)} = 137.55$ ,  $p < .001$ , demonstrating that the addition of the three covariances significantly improved the model fit.

The standardised factor-loadings factor ranged from .35 – .57 for the service subscale, .53 – .57 for the helping subscale, and .40 – .63 for the ideology subscale, with  $R^2$  ranging from .12-.33 for service, .28 – .32 for helping, .16-.39 for ideology. Inter-item correlations ranged from .14 to .32 ( $M = .22$ ) for helping, .08 to .49 ( $M = .28$ ) for ideology, and was .44 between helping items. Item variance ranged from 0.97 to 1.93 for the service factor ( $M = 1.28$ ), from 1.24 to 1.57 for the ideology factor ( $M = 1.42$ ), and from 0.85 to 1.73 ( $M = 1.30$ ) for the helping factor.

Inter-factor correlations illustrated a significant positive correlation between all contribution factors, ranging from low ( $r = .23$ ; leadership and helping/ideology) to high ( $r = .98$ ; helping and ideology). The average inter-factor correlation was .52. This suggests that while the contribution factors generally represent related, but distinct aspects of contribution, a high level of conceptual overlap is evinced

between helping and ideology factors. However, a three-factor model combining these factors did not fit the data significantly better compared to the four-factor model,  $\chi^2_{(3)} = 1.28, p > .05$ . The change in AIC was also low ( $\Delta \text{AIC} = 4.73$ ), therefore the four-factor model of contribution was retained.

Internal reliability for the ideology factor was good ( $\alpha = .70$ ). A moderate correlation was found between helping items ( $r = .44$ ). However, Cronbach's alpha for the service subscale was low ( $\alpha = .51$ ). Given the good fit of the model, and the consideration of latent variables as error free (Shevlin, 2009), the service subscale was retained. Thus, the contribution measure was used in subsequent analyses.

**6.4.3 Structure Equation Modelling.** The purpose of this study was to construct a structural equation model depicting the relationships between theoretically key aspects of adolescent self-regulation (i.e., SOC, prosocial values, resistance to peer influence, emotion-regulation, and future orientation) and subsequent impact on positive (PYD and contribution) and negative (depression and risky-behaviours) indices of adolescent development.

First, the independent variables are each modelled directly to PYD, contribution, risky-behaviours and depression, in order to examine the individual relationships of predictors with outcomes. Given previous research illustrating gender and age differences on a number of scales (e.g., Lerner et al., 2008; Steinberg et al., 2007; Steinberg et al., 2009), the effects of age and gender in all models were controlled for. This was conducted by including age and gender in the SEM model and stipulating pathways from age and gender to each latent variable (Kline, 2008). This approach is also included in gender and age-specific models, although for example, in a model for boys only, gender cannot also be included as a variable. Thus, age is controlled for in gender-specific model, and gender is controlled for in age-specific models.

The direct, indirect and mediation effects (via SOC) within the model are subsequently assessed. As the current model hypothesised direct and indirect effects between the predictors and outcomes, via SOC, it is important to test whether predictors that significantly predict SOC, have a subsequent significant influence on outcomes. An important distinction is the difference between mediated effects and indirect effects (Holmbeck, 1997). Evidence for an indirect effect is established if

the paths between a predictor variable (PV) and outcome variable (OV), PV and mediator variable (MV), and the mediator (MV) and outcome variable (OV) are significant. In order to test a mediation effect, it is necessary to test whether the direct path between the PV and OV is significant, and if so, whether the addition of this path to a mediation model significantly improves model fit. If the inclusion of the direct path does not improve model fit, the mediation effect is supported.

Separate models were then tested for gender and age groups. In addition, this study conducted multi-group analyses to determine whether the model functioned differently across gender or between adolescent age-groups (i.e., 12-15 years, 16-19 years).

***Item parcelling.*** In order to reduce the degrees of freedom in the models estimated for the present study, items for the scales were divided into “parcels”. Parcels are subsequently used as indicators for the latent construct (Little, Cunningham, Shahar, & Widaman, 2002).

Parcelling is a measurement practice that is commonly used in multivariate approaches to psychometrics, and in particular with latent-variable analysis (e.g., SEM). Little and colleagues (2002) define a parcel as “an aggregate-level indicator comprised of the sum/average of two or more items, responses or behaviours” (p. 152). Advocates of parcelling method in SEM argue that, as fewer parameters are needed to define a construct, parcelling is preferred over using individual items (Bagozzi & Edwards, 1998). Compared with item-level data, models using parcelled data is more parsimonious, less likely to have correlated residuals or dual loadings, and has a reduced level of various sources of sampling error (i.e., distributional violations, communality; MacCallum et al., 1999). Although several problems have been identified with the practice of parcelling (e.g., parcelling may provide biased loadings onto the latent variable), it has been deemed appropriate when the focus is on the relations among latent variables (Little et al., 2002). As the goal of the current study is to assess the relationship between a number of latent-variables, parcelling is deemed appropriate.

Parcelling of items was conducted with a view to maintaining the dimensionality of the respective constructs. The dimensionality of the constructs used in the current model is outlined above (see Section 6.4.2). For example, for

unidimensional constructs (e.g., RPI), items were randomly parcelled into two parcels containing five items each. The average parcel score is then used as an indicator in the SEM model. For multi-dimensional constructs such as depression, an internal-consistency approach was used (Kishton & Widaman, 1994). This approach maintains the multidimensional nature of the construct (i.e., maintains subscales of depressed affect, somatic complaints, positive affect, and interpersonal problems), by creating parcels that represent each facet of the construct. For instance, an individual parcel was created to represent depressed affect by obtaining the average of the seven depressed affect items. This parcel was then used as an indicator of depressed affect in the SEM model. This was repeated for each subscale of depression, in addition to the multidimensional constructs of SOC, prosocial prototypes, contribution, risk and PYD. See Figure 6.2 for final model.

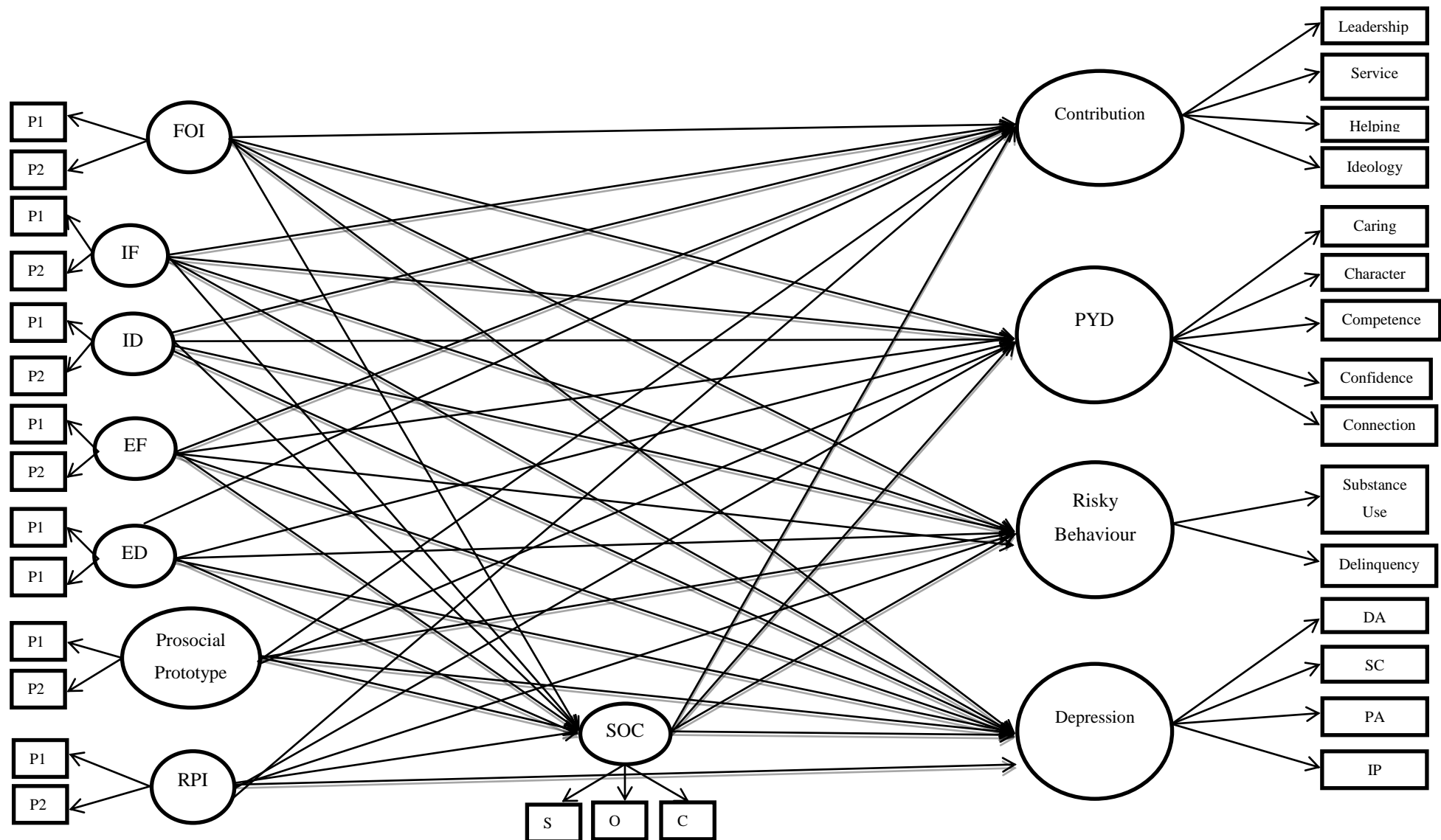


Figure 6.2: Direct and indirect effects of prosocial prototype, RPI, emotion regulation (Internal-Functional[IF]; Internal-Dysfunctional [ID]; External-functional [EF]; External-Dysfunctional [ED]), and future orientation (FOI) on self-regulation (SOC) and as an influencing factor on PYD, Contribution, Risky Behaviours, and Depression. The effects of age and gender are controlled for but are not included for clarity.

***SEM Model: Predictors of PYD, contribution, risky-behaviours, and depression.*** A Structural Equation Model was established to examine the Adolescent Self-Regulation model; the relationships between the key aspects of adolescent self-regulation (i.e., SOC, prosocial prototypes, resistance to peer influence, emotion-regulation, and future orientation) and positive youth development (PYD), contribution, risky-behaviours and depression.

The initial model illustrated a poor fit,  $\chi^2_{(346)} = 1821.54, p < .001, Q = 5.26$ , CFI = .79, TLI = .73, RMSEA = .080 (90% CI = .076 - .083), SRMR = .08, AIC = 41185.62. Specifically, a problem was identified with the positive affect depression subscale, with high cross-loadings on a number of other subscales (e.g., Contribution Service MI = 127.15, EPC = 0.81). This subscale was subsequently removed. Furthermore, the emotion regulation subscale of internal-dysfunctional also illustrated significant cross-loadings on a number of other subscales and was subsequently removed.

Modification indices also suggested the addition of a number of covariances (e.g., between depressed affect and somatic complaints, between character and contribution ideology). Given the thematic overlap between the PYD and contribution subscales, these covariances were added.

The final SEM model showed an improved fit,  $\chi^2_{(35)} = 562.49, p < .001$ . However, model fit indices were still poor,  $\chi^2_{(311)} = 1259.05, p < .001, Q = 4.05$ , CFI = .85, TLI = .81, RMSEA = .067 (90% CI = .064 - .071), SRMR = .06, AIC = 39731.46. All indicators loaded significantly onto their respective latent variables ( $ps < .001$ ). Modification indices suggested a number of further additions to the model. However, the addition of further pathways or covariances could not be justified on conceptual grounds (e.g., a covariance between external-dysfunction [ED; emotion regulation subscale] and compensation [self-regulation subscale] could not be added as ED was proposed as a predictor of SOC). The current model may be accepted on a number of grounds; the satisfactory chi-square to degrees of freedom ratio (i.e.,  $Q < 5$ ), the adequate RMSEA and SRMR values (i.e.,  $< .08$ ), and the current focus on the relations between latent variables in the current model. In addition, the CFI and TLI fit indices are problematic in that these indices assume that all latent variables are uncorrelated (Bentler, 1990). In the current model, latent



variables such as PYD and contribution, and risk and depression, are expected to correlate. Therefore, overall, this model is accepted as adequate.

**Direct effects.** Looking at the structural paths, the direct pathways of SOC, resistance to peer influence, prosocial prototype, and external-functional emotion regulation on the PYD latent construct were all found to be positively statistically significant. Furthermore, external-dysfunctional emotion regulation was significantly negatively related to PYD. Notably, future orientation and internal-functional emotion regulation were not significant predictors of PYD. Thus, higher goal-directed behaviours, more autonomy from peers, more positive attributions towards prosocial behaviour, and more external-functional emotion regulation strategies, and fewer external-dysfunctional emotion regulation strategies, predicted higher PYD scores in adolescents. In total, 87% of the variance in PYD was explained by the Adolescent Self-Regulation Model. See Table 6.4 for model standardised and unstandardized regression weights, standard errors and significance levels of model pathways.

In terms of predictors of SOC, internal-functional emotion regulation was significantly positively related to SOC, while external-dysfunctional emotion regulation strategies was significantly negatively related to SOC, such that higher internal-functional emotion regulations strategies, and fewer external-dysfunctional emotion regulation strategies, predicted higher levels of goal-directed behaviours. The predictors explained 17% of the variance in SOC scores.

In terms of the outcome of contribution, the direct pathways of future orientation, prosocial values, external-functional emotion regulation were significantly positively predictive of contribution scores, while external-dysfunctional emotion regulation strategies were significantly negatively predictive of contribution ( $ps < .05$ ). Higher orientation towards the future, higher prosocial values and greater external-functional emotion regulation strategies, in addition to lower external-dysfunctional emotion regulation strategies, were related to higher contribution scores. Prosocial prototypes ( $\beta = .32$ ) appeared to be the strongest predictor of contribution, followed by future orientation ( $\beta = .18$ ), external-functional emotion regulation ( $\beta = .18$ ), and external-dysfunctional emotion

regulation ( $\beta = -.16$ ; see Table 6.4). The SEM model explained a total of 55.10% of the variance in contribution.

In terms of the outcome of the negative indices of development, risky-behaviours and depression, a number of significant pathways were observed. Looking at risky-behaviours, future orientation, and prosocial values were significantly negatively related to risky-behaviours, while external-dysfunctional emotion regulation strategies was significantly positively related to risky-behaviour scores ( $ps < .05$ ). Higher orientation towards the future and prosocial values, and lower external-dysfunctional emotion regulation strategies were related to lower risky-behaviour scores. External-dysfunctional emotion regulation ( $\beta = .67$ ) appeared to be the strongest predictor of risky-behaviours, followed by prosocial prototypes ( $\beta = -.24$ ), and future orientation ( $\beta = -.16$ ; see Table 6.4). The SEM model explained a total of 58.50% of the variance in risky-behaviours.

In terms of depression, the pathways of SOC, resistance to peer influence, and external-dysfunctional emotion regulation strategies were significantly related to depression scores. Goal-directed behaviours, and autonomy from peers were significantly negatively related to depression, while external-dysfunctional emotion regulation strategies was significantly positively related to depression scores ( $ps < .05$ ). Higher goal-directed behaviour and autonomy from peers, and lower external-dysfunctional emotion regulation strategies, were related to lower depression scores. Overall, the SEM model explained a total of 18% of the variance in depression. See Table 6.4 for model standardised and unstandardised regression weights, standard errors and significance levels of model pathways.

Table 6.4

*Standardised and unstandardised regression weights (with standard errors) for the structural equation model of positive youth development, contribution, risky-behaviours and depression using time 1 data*

Pathway		$\beta$	B	SE	<i>p</i>
<b>Direct Effects on PYD</b>					
PYD <==	SOC	.36***	2.23	.41	< .001
	RPI	.17***	0.45	.12	< .001
	FOI	.04	0.06	.11	.581
	Prototype	.45**	0.79	.23	.001
	IF	.03	0.05	.13	.708
	EF	.24**	0.28	.10	.005
	ED	-.14*	-0.29	.13	.026
<b>Direct Effects on SOC</b>					
SOC <==	RPI	.01	0.00	.02	.898
	FOI	-.03	-0.01	.02	.736
	Prototype	-.02	-0.01	.03	.823
	IF	.40**	0.09	.03	.001
	EF	-.07	-0.01	.02	.515
	ED	-.25**	-0.08	.02	.001
<b>Direct Effects on Contribution</b>					
Contribution <== SOC		.06	0.13	.12	.264
	RPI	.06	0.06	.04	.178

Pathway		$\beta$	B	SE	<i>P</i>
	FOI	.18*	0.11	.05	.017
	Prototype	.32**	0.20	.07	.003
	IF	.15	0.08	.05	.128
	EF	.18*	0.07	.04	.044
	ED	-.16*	-0.11	.04	.014
<b>Direct Effects on Risky-behaviours</b>					
Risky	<== SOC	-.01	-0.04	.21	.834
	RPI	.06	0.09	.07	.204
	FOI	-.16*	-0.16	.08	.033
	Prototype	-.24*	-0.24	.10	.014
	IF	.12	0.10	.08	.206
	EF	.09	0.06	.06	.265
	ED	.67***	0.77	.09	< .001
<b>Direct Effects on Depression</b>					
Depression	<== SOC	-.19**	-0.56	.17	.001
	RPI	-.11*	-0.14	.06	.022
	FOI	.07	0.06	.06	.302
	Prototype	-.20	-0.17	.09	.060
	IF	.11	0.08	.07	.251
	EF	-.02	-0.01	.05	.864
	ED	.18*	0.17	.07	.014

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 $R^2$ 

Positive Youth Development  $R^2 = .87$ , SE = .06,  $p < .001$ ;

Intentional Self-regulation  $R^2 = .17$ , SE = .05,  $p < .001$ ;

Contribution  $R^2 = .55$ , SE = .07,  $p < .001$ ;

Risky-behaviours  $R^2 = .59$ , SE = .06,  $p < .001$ ;

Depression  $R^2 = .18$ , SE = .04,  $p < .001$ .

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*Note.* PYD = Positive Youth Development; SOC = Self-regulation; RPI = Resistance to Peer Influence; FOI = Future Orientation Inventory; Proto = Prosocial Prototype; IF = Internal-functional emotion regulation; EF = External-functional emotion regulation; ED = External-dysfunctional emotion regulation. SE = standard error.

Statistical significance: \*\*\* $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

**Indirect effects.** As the current model is structured with a variable (i.e., SOC) potentially mediating the relationships between predictors and outcomes, and the predictors are hypothesised to influence outcomes both directly and indirectly through SOC, a test of indirect effects was carried out for predictors that were significantly related to SOC. In the current model, both internal-functional and external-dysfunctional emotion regulation were found to be significantly related to SOC, while SOC was significantly related to PYD and depression. Therefore, the indirect effects of internal-functional (IF) and external-dysfunctional (ED) emotion regulation on positive youth development and depression, via SOC, were assessed.

The indirect relationships of IF and ED emotion regulation strategies on PYD and depression, via SOC, were significant ( $ps < .05$ ). IF was positively related to PYD ( $\beta = .14, p = .003$ ) and negatively related to depression ( $\beta = -.08, p = .017$ ), while ED was significantly negatively related to PYD ( $\beta = -.09, p = .005$ ) and positively related to depression ( $\beta = .05, p = .019$ ), via SOC. Therefore, external-dysfunctional emotion regulation strategies were found to influence overall PYD and depression scores both directly and indirectly, while IF was found to influence overall PYD and depression scores indirectly through SOC. The significant direct and indirect pathways for the Adolescent Self-Regulation Model are illustrated in Figure 6.3.

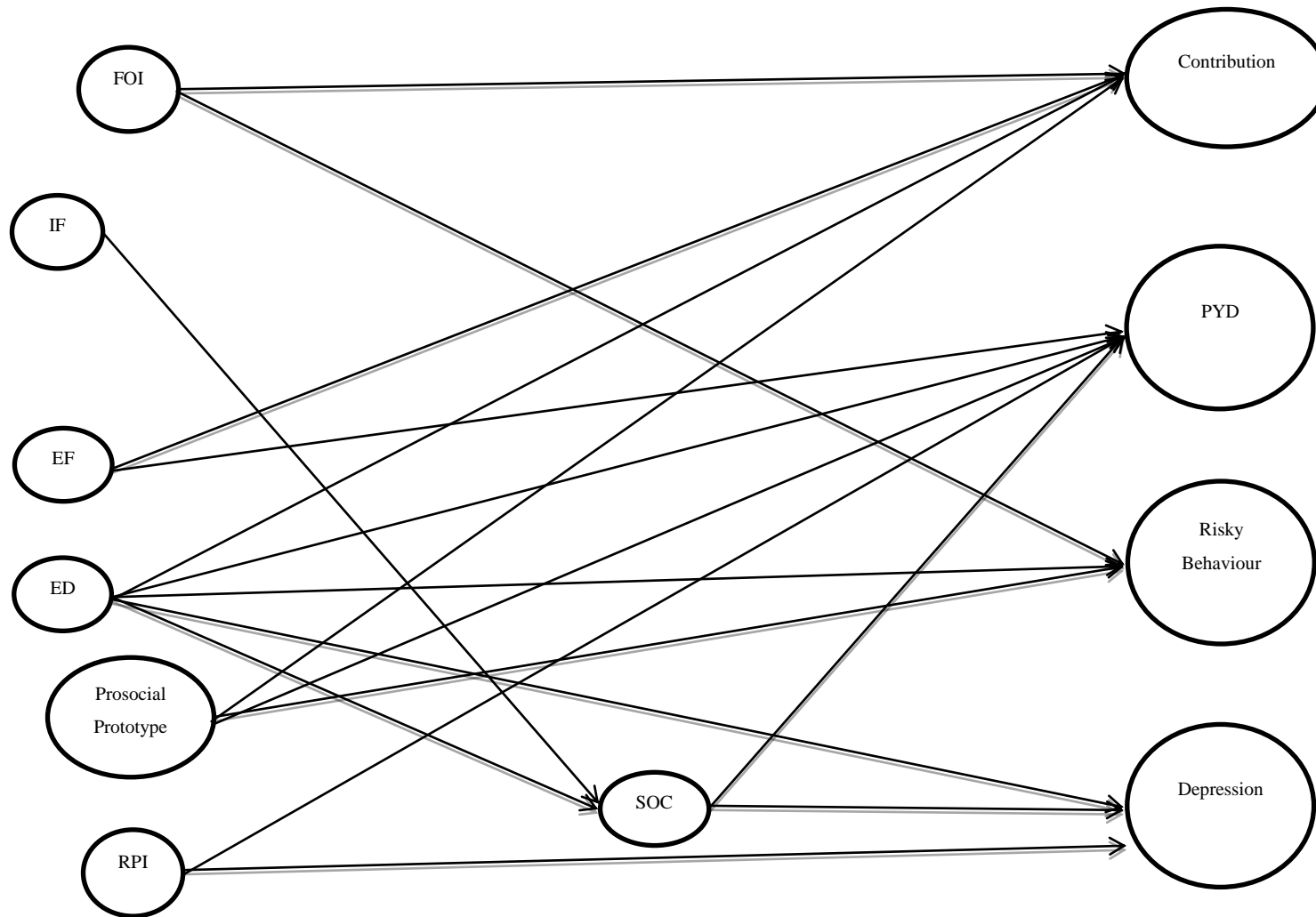


Figure 6.3: Significant direct and indirect effects of prosocial prototype, resistance to peer influence, emotion regulation (Internal-Functional[IF]; External-functional [EF]; External-Dysfunctional [ED]), and future orientation (FOI) on self-regulation (SOC) and as an influencing factor on PYD, Contribution, Risky Behaviours, and Depression..

*Mediation Analyses.* As previously outlined (see p. 228), indirect and mediating effects are different. Therefore, the current study also tested the mediating effects of the predictors (i.e., internal-functional and external-dysfunctional emotion regulation) that were significantly related to SOC, which subsequently predicted depression and PYD scores. Thus, the mediating role of SOC between the internal-functional and external-dysfunctional emotion regulation and PYD and depression were assessed separately.

The mediated effects were examined using guidelines outlined by Holmbeck (1997). These guidelines are based on the assumption that there is a latent predictor variable (Predictor variable [PV] = internal-functional/external-dysfunctional emotion regulation), a hypothesised latent mediator variable (Mediating variable [MV] = SOC), and a latent outcome variable (Outcome variable [OV] = positive youth development [PYD] or depression). First, a model is created to assess the direct effect between the latent predictor variable (PV) and the latent outcome variable (OV). Second, the overall fit of the full model is assessed (PV → MV → OV): latent predictor (i.e., internal-functional/external functional emotion regulation) → latent mediator (self-regulation) → latent outcome (positive youth development). Finally, the fit of this unconstrained model (Model B) is compared to a fully mediated model (i.e., PV → OV path is constrained to zero; Model C). Evidence of a mediation effect is observed if the addition of the PV → OV path to the constrained model does not improve model fit (i.e., the previously significant PV → OV path is reduced to non-significance when the mediator is added). Improvement in fit is examined using a chi-square significance test.

Table 6.5 and Table 6.6 outline the mediation models for the effect of internal-functional (IF) and external functional (EF) emotion regulation on PYD and depression. For both mediation models, the PV → OV path significantly improves the model (i.e., a significant chi-square difference test was observed), illustrating no mediation effect. Thus in the present study, the mediation analysis indicated that the relations between IF and EF and PYD and depression respectively, were not fully mediated by SOC.



Table 6.5

*Fit indices of Mediation Models for effects on positive youth development via SOC at time 1*

Model		$\chi^2$ (df)	Q	RMSEA (90% CI)	CFI	TLI	$\chi^2$ diff	
							$\chi^2$ (df)	p
Internal-functional Emotion Regulation (IF)								
A	PYD $\leftarrow$ IF	156.51 (12)	13.04	.134 (.116-.153)	.88	.80	-	-
B	PYD $\leftarrow$ SOC $\leftarrow$ IF	227.34 (31)	7.33	.097 (.086-.109)	.88	.82	-	-
C	Remove PYD $\leftarrow$ IF pathway	263.61 (32)	8.24	.104 (.092-.116)	.85	.79	36.27 (1)	< .001
External-functional Emotion Regulation (EF)								
D	PYD $\leftarrow$ EF	157.87 (12)	13.16	.135 (.116-.154)	.89	.80		
E	PYD $\leftarrow$ SOC $\leftarrow$ EF	290.51 (31)	9.37	.112 (.100-.124)	.85	.78	-	-
F	Remove PYD $\leftarrow$ EF pathway	353.86 (32)	11.06	.122 (.111-.134)	.81	.73	63.35	< .001

Table 6.6

*Fit indices of Mediation Models for effects on depression via SOC at time 1*

Model		$\chi^2$ (df)	Q	RMSEA (90% CI)	CFI	TLI	$\chi^2$ diff	
							$\chi^2$ (df)	p
<b>Internal-functional Emotion Regulation (IF)</b>								
A	Depression $\leftarrow$ IF	33.89 (2)	16.95	.154 (.111-.202)	.97	.84	-	-
B	Depression $\leftarrow$ SOC $\leftarrow$ IF	59.37 (15)	3.96	.066 (.049-.085)	.97	.93	-	-
C	Remove Depression $\leftarrow$ IF pathway	67.89 (16)	4.24	.070 (.053-.087)	.96	.93	8.52 (1)	< .001
<b>External-functional Emotion Regulation (EF)</b>								
D	Depression $\leftarrow$ EF	19.21 (2)	9.61	.113 (.071-.162)	.98	.92		
E	Depression $\leftarrow$ SOC $\leftarrow$ EF	100.61 (15)	6.71	.092 (.076-.110)	.93	.88	-	-
F	Remove Depression $\leftarrow$ EF pathway	107.27(16)	6.70	.093 (.076-.109)	.93	.88	6.66 (1)	< .001

***Summary of Overall Structural Equation Model Results.*** A key aim of the current study was to test the Adolescent Self-Regulation model; to test whether the hypothesised individual factors of prosocial prototypes, emotion regulation, peer influence, future orientation, and SOC, predicted outcomes of positive (i.e., PYD and contribution) and negative (i.e., risk and depression) indices of development in Irish adolescents. A number of findings emerged.

First, the hypothesised relationship between the predictors of prosocial prototypes, resistance to peer influence, emotion regulation and SOC, and the PYD latent variable was supported. Prosocial prototypes, resistance to peer influence, and external-functional emotion regulation strategies, were all significantly positively related to PYD, while external-dysfunctional emotion regulation was significantly negatively related to PYD. Notably, future orientation and internal-functional emotion regulation strategies did not predict PYD scores.

Second, the hypothesised indirect relationships between the predictors of external-dysfunctional and internal-functional emotion regulation on PYD, via SOC, were supported. While full mediation was not observed, external-dysfunctional and internal-functional emotion regulations were found to significantly influence PYD and depression indirectly through SOC. Notably, other hypothesised motivational, attitudinal and emotional factors such as prosocial prototypes, resistance to peer influence, future orientation, and external-functional emotional regulation, were not significant predictors of SOC, and therefore did not influence outcomes, such as PYD, indirectly.

Third, looking at the outcome of contribution, prosocial prototypes, future orientation, and external-functional emotion regulation strategies, were all significantly positively related to contribution, while external-dysfunctional emotion regulation was significantly negatively related to contribution. Resistance to peer influence and internal-functional emotion-regulation were not related to contribution.

Finally, a number of predictors were also directly related to negative outcomes of risky-behaviours and depression. For instance, lower future orientation and prosocial prototype scores, and higher external-dysfunctional emotion regulation predicted higher risky-behaviours, while lower resistance to peer influence, lower SOC, and higher external-dysfunctional emotion regulation, predicted depression.

Therefore looking across positive and negative outcomes, positive perceptions of prosocial behaviour, a greater orientation towards the future, more autonomy from peers, more adaptive emotion regulation, less maladaptive emotion regulation, and higher levels of SOC were related to desired outcomes of higher PYD and contribution scores, and lower risky-behaviours and depression. A summary of all significant and non-significant pathways across the overall sample model, longitudinal sample, and gender, and age-specific models, is outlined in Appendix P.

**6.4.4 Gender and age-specific comparisons.** In order to test for gender and age differences, separate models are tested for boys, girls, younger and older adolescents. In the models assessing gender, the influence of age was controlled. Similarly, in the models assessing age differences, the influence of gender was controlled. As the invariance of the structural model across gender and age groups were our primary focus in the current study (e.g., the model functions the same for boys and girls), the figures for the separate gender- and age-specific models are reported in the Appendices (Appendix L to Appendix O).

Following the assessment of each gender- and age-specific model, multiple-group analyses were conducted in order to examine whether the models for boys and girls, and younger and older adolescents, were significantly different. Therefore, separate models for boys and girls (and younger and older adolescent groups), were specified simultaneously within the same overall model. Each model was initially run with all paths fixed to be equal (i.e., invariant) across gender (or age groups separately<sup>16</sup>). Using the two-group unconstrained model as the comparative model, a model with every pathway held constant across groups is tested. Chi-square tests and change in CFI indices are used to determine whether the unconstrained model and the model with constrained pathways were significantly different. The invariance of structural pathways is then tested for differences by freeing one path at a time in a stepwise manner according to the modification indices. This model is compared to a fully constrained model. A significant change in chi-square model fit

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<sup>16</sup> The current sample size did not allow the running of a 4-group model featuring younger girls, younger boys, older girls, and older boys.

between these models is evidence of differences on the path that was freely estimated (MacCallum et al., 1999).

In the following section, models are presented detailing the following; boys only model; girls only model; gender multigroup model; younger adolescents model; older adolescents model; and age multigroup model.

**Gender specific models: Path model for boys.** For males, the model provided an adequate model fit,  $\chi^2_{(311, n = 387)} = 778.60, p < .001$ , CFI = .87, TLI = .82, RMSEA = .062 (90% CI = .057- .068), SRMR = .06, AIC = 22686.76. The standardised and unstandardized solution scores for the pathways within the model specified and estimated for males are illustrated in Appendix L. In addition, a graphical depiction of the significant pathways illustrating standardised regression weights for boys only is presented in Appendix L.

Overall, the specified model for boys only accounted for 34.2% of the variance in SOC, 88.1% of the variance in positive youth development scores, 53.4% of contribution, 49.9% of risky-behaviours, and 30.4% of depression. A summary of all significant and non-significant pathways across the overall sample model, longitudinal sample, and gender, and age-specific models, is outlined in Appendix P.

**Gender specific model: Path model for girls.** For girls, the model provided an adequate model fit,  $\chi^2_{(311, n = 284)} = 789.61, p < .001$ , CFI = .84, TLI = .78, RMSEA = .074 (90% CI = .067- .080), SRMR = .07, AIC = 16651.27. Appendix J shows the standardised and unstandardized solution scores for the pathways within the model specified and estimated for girls. In addition, a graphical depiction of the significant pathways for girls is included in Appendix M.

The model accounted for 19.9% of the variance in self-regulation, 92.2% of the variance in positive youth development scores, 45.4% of contribution, 73.9% of risky-behaviours, and 19.1% of variance in depression scores. A summary of all significant and non-significant pathways across the overall sample model, longitudinal sample, and gender, and age-specific models, is outlined in Appendix P.

**Gender measurement invariance.** After assessing models for boys and girls, and illustrating that the hypothesised model was an adequate fit for both males and females separately, the current study sought to assess differences between the two

groups. The first step in testing the differences in the structural model is to assess the equivalence of the measurement model across groups (Vandenberg & Lance, 2000). Thus, multigroup CFAs were carried out to test for configural invariance (i.e., the same pattern of fixed and free factor loadings is specified for each groups, while the magnitudes of these loadings are not constrained equal). If configural invariance is not observed, differences between groups may be attributed to differences in the measurement properties of the self-report instruments, rather than true differences in the latent variable (Dishman, Saunders, Motl, Dowda, & Pate, 2009).

First, an unconstrained model is created (model 1), where all paths are allowed to vary across gender. Second, a constrained model (model 2), where all paths are fixed to be equal across gender, is created. If the relationships between the indicators and the latent constructs are different between groups, the unconstrained model (model 1) will display a better fit. This is indicated by a statistically significant chi-square difference test and fit indices (i.e., change in CFI of greater than .01 [ $\Delta\text{CFI} > .01$ ]). As previously noted, the chi-square difference test is inappropriate to use in isolation (due to sensitivity to sample size), therefore the  $\Delta\text{CFI}$  index with a cut-off criterion of  $<.01$  is also used to indicate measurement equality across groups (Byrne, 2010). If the overall model is equivalent for both groups, the constrained and unconstrained models will not be significantly different as indicated by the chi-square test and/or the  $\Delta\text{CFI}$  index.

In the present study, overall results revealed that the unconstrained (model 1) and constrained model (model 2) were not significantly different (see Table 6.7). Although a significant chi-square difference was observed,  $\chi^2_{(18)} = 51.12, p < .001$ , the  $\Delta\text{CFI}$  was not significant (i.e.,  $<.01$ ). Thus, the factor loadings were found to be equal across gender (see model 1 and model 2, Table 6.7). Therefore, all latent variable factor loadings in the measurement model were constrained to be equal as the invariance of the structural model across gender was assessed.

***Invariance of the gender structural model.*** In order to test whether the structural pathways differed by gender, multiplegroup analyses were conducted.

Looking across gender groups, path coefficients were constrained (model 3, Table 6.7). Comparing this to the model with path coefficients freely estimated

(model 2), no significant difference was observed,  $\chi^2_{(34)} = 38.61, p > .05$ . Thus, results indicated that overall, the models for males and females did not differ significantly.

However, while the model performed similarly for males and females, several gender differences in structural pathways were observed. For instance, for boys, external-functional and external-dysfunctional emotion regulation were significant predictors of SOC scores, while for girls, these pathways were non-significant. For contribution, internal-functional and external-dysfunctional emotion regulation were significant for boys only, while for risky-behaviours, future orientation and prosocial values were significant predictors for girls only. Finally for depression scores, SOC, external-functional, and external-dysfunctional emotion regulation strategies were significant for girls-only, while resistance to peer influence and external-dysfunctional emotion regulation strategies were significant predictors for boys only. Thus, while the overall model performed similarly across gender, differences were observed between boys and girls. Gender differences are summarised in Figure 6.4.

Table 6.7

*Tests of the structural invariance of the adolescent self-regulation model by gender*

Model		$\chi^2$	df	$\Delta \chi^2$	$\Delta df$	RMSEA	RMSEA (90% CI)	CFI	AIC
Gender Factorial Invariance									
(1)	Configural model	1844.64	640	-	-	.075	.071, .079	.81	39578.46
(2)	First-Order factor loadings invariant	1895.76	658	51.12***	18	.075	.071, .079	.81	39593.58
(3)	Structural paths constrained	1934.37	692	38.61	34	.073	.069, .077	.80	39564.19

*Note.* RMSEA = root mean squared error of approximation; CFI = Comparative Fit Index; CI = Confidence Interval.

\* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$ .



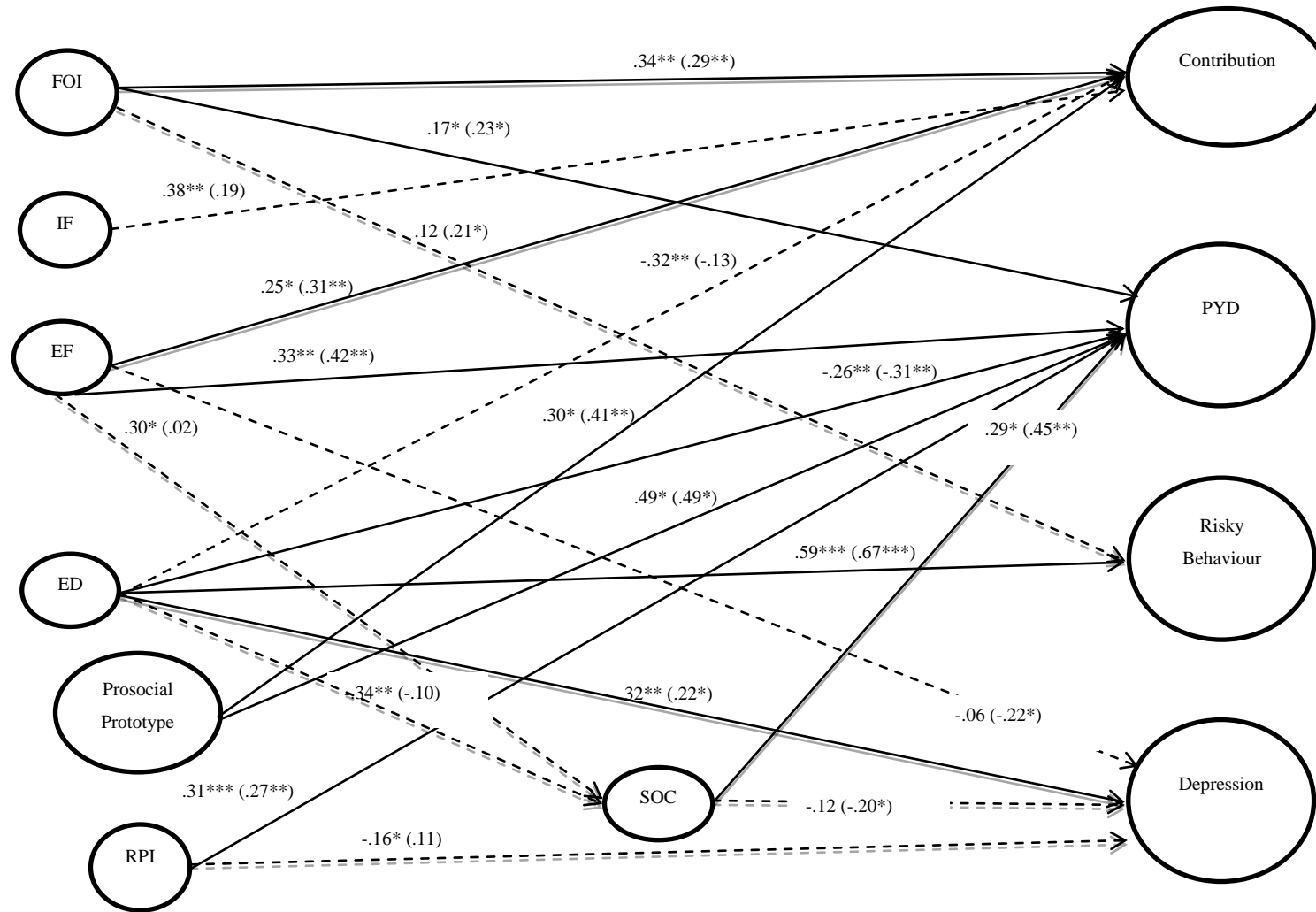


Figure 6.4: Standardised parameter estimates for boys and girls (girls in parentheses), controlling for age (not shown).

*Note.* Observed indicators and error residuals are omitted for clarity. Dashed lines represent pathways that are significant for one group only.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Age specific model: Path model for younger adolescents.** For younger adolescents, the model provided an adequate model fit,  $\chi^2_{(311, n=411)} = 862.37, p < .001$ , CFI = .87, TLI = .83, RMSEA = .066 (90% CI = .060- .071), SRMR = .06, AIC = 24323.61. The standardised and unstandardized solution scores for the pathways within the model specified and estimated for younger adolescents are illustrated in Appendix N. In addition, a graphical depiction of the significant pathways illustrating standardised regression weights for younger adolescents only is presented in Appendix N.

Overall, the specified model for younger adolescents accounted for 22% of the variance in self-regulation, 93.4% of the variance in positive youth development scores, 51.1% of contribution, 54.5% of risky-behaviours, and 32% of variance in depression scores. A summary of all significant and non-significant pathways across the overall sample model, longitudinal sample, and gender, and age-specific models, is outlined in Appendix P.

**Age specific model: Path model for older adolescents.** For older adolescents, the model provided a poor model fit,  $\chi^2_{(311, n=260)} = 936.02, p < .001$ , CFI = .78, TLI = .71, RMSEA = .082 (90% CI = .071- .091), SRMR = .08, AIC = 15519.50. The standardised and unstandardized solution scores for the pathways within the model specified and estimated for older adolescents are illustrated in Appendix O. In addition, a graphical depiction of the significant pathways illustrating standardised regression weights for older adolescents only is presented in Appendix O.

Overall, the model accounted for 47.8% of the variance in self-regulation, 89.4% of the variance in positive youth development scores, 47.3% of contribution, 52.9% of risky-behaviours, and 33.6% of variance in depression scores. A summary of all significant and non-significant pathways across the overall sample model, longitudinal sample, and gender, and age-specific models, is outlined in Appendix P.

**Age measurement invariance.** After assessing models for younger and older adolescents, the current study sought to assess differences between the two groups (see Table 6.8). The process outlined above for gender measurement and structural invariance was repeated to examine whether differences existed in between younger and older adolescent age groups. Results revealed that overall, the unconstrained

(model 1) and constrained model (model 2) were significantly different. A significant chi-square difference was observed,  $\chi^2_{(18)} = 92.70, p < .001$ , and the  $\Delta CFI$  was above the criterion (i.e.,  $\Delta CFI = .11$ ). Looking at modification indices (MI), the indicators for the risky-behaviour latent variable were suggested as problematic (substance use MI = 132.78; delinquency MI = 135.08). Releasing the delinquency indicator lead to a significant decrease in chi-square (model 2 vs. model 2a =  $\chi^2_{(1)} = 74.59, p < .001$ ). The subsequent model, with all other indicators constrained, was not significantly different from the unconstrained model,  $\chi^2_{(17)} = 18.11, p > .05$ . Thus, the factor loadings (except delinquency) were found to be equal across age groups (see model 1 and model 2a, Table 6.8). Therefore, all latent variable factor loadings (except delinquency) in the measurement model were constrained to be equal as the invariance of the structural model across age groups was assessed.

***Testing the structural invariance across age groups.*** The procedure outlined above to assess structural invariance was repeated to assess differences in structural pathways across age groups. First, the path coefficients were constrained across age groups (model 3, Table 6.8). Comparing this to the model with path coefficients freely estimated (model 5a), a significant chi-square difference was observed,  $\chi^2_{(34)} = 75.75, p < .001$ , however the  $\Delta CFI$  was less than the established criterion (i.e.,  $\Delta CFI = .006$ ). Thus, results indicated that, overall, the models for younger and older adolescents did not differ significantly.

However, similar to the gender model, differences were observed between younger and older adolescents. For example, while SOC was a significant predictor of PYD for younger adolescents, this pathway was non-significant for older adolescents. In addition, looking at predictors of depression, resistance to peer influence, prosocial values and external-functional emotion regulation were significant for younger adolescents, but non-significant as predictors of depression for older adolescents. Age group differences are summarised in Figure 6.5.

Table 6.8

*Tests of the structural invariance of the adolescent self-regulation model by age groups*

Model	$\chi^2$	df	$\Delta \chi^2$	$\Delta df$	RMSEA	RMSEA (90% CI)	CFI	AIC
Age Factorial Invariance								
(1) Configural model	1774.10	640	-	-	.073	.069, .077	.83	39557.72
(2) First-Order factor loadings invariant	1866.80	658	92.70***	18	.074	.070, .078	.82	39614.42
(2a) Factor loadings invariant – release risk	1792.21	657	18.11	17	.072	.068, .076	.83	39541.83
(3) Structural paths constrained	1867.96	691	75.75***	34	.071	.067, .075	.82	39549.58

*Note.* RMSEA = root mean squared error of approximation; CFI = Comparative Fit Index; CI = Confidence Interval.

\* =  $p < .05$ ; \*\* =  $p < .01$ ; \*\*\* =  $p < .001$ .

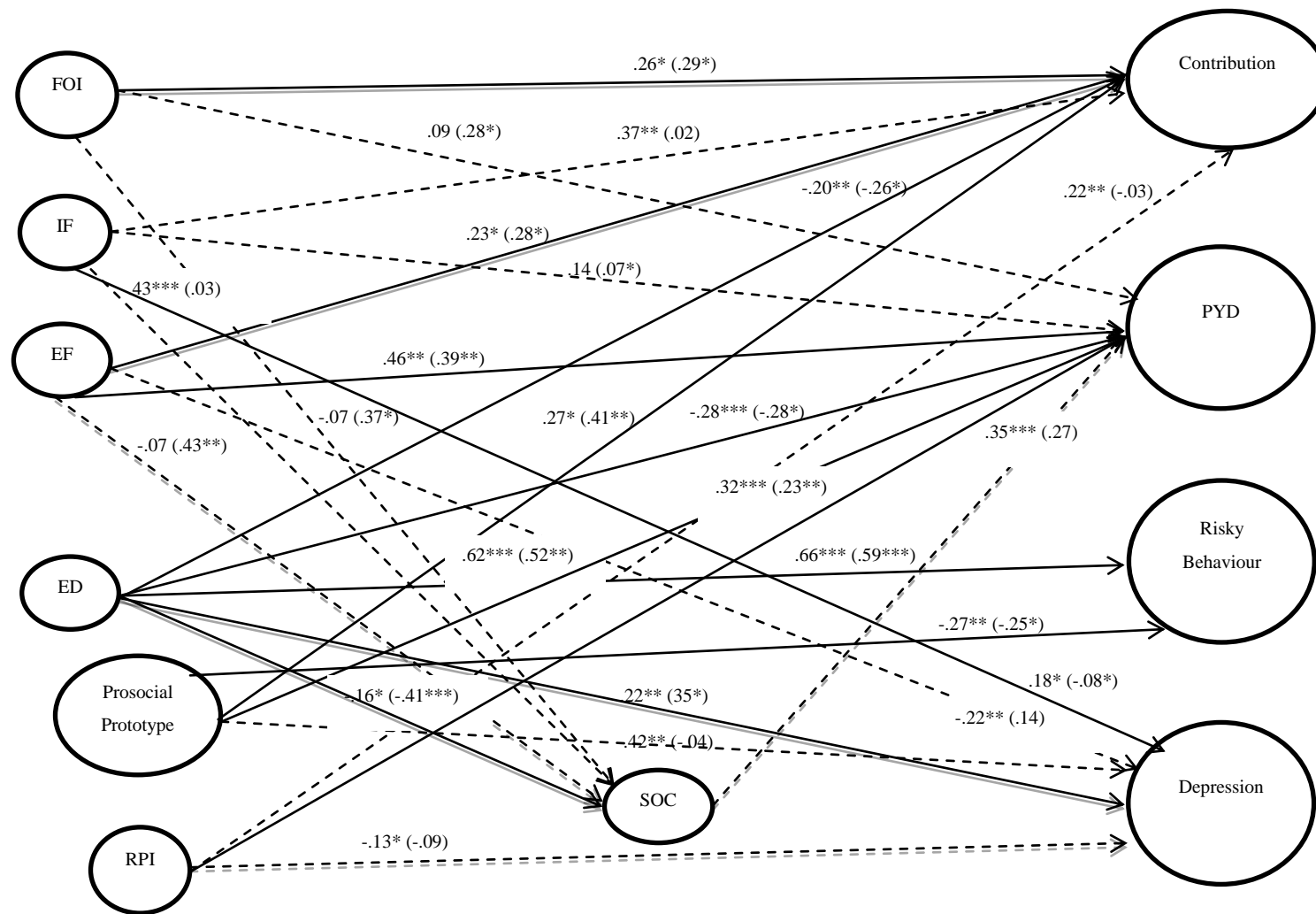


Figure 6.5: Standardised parameter estimates for younger and older adolescents (older adolescents in parentheses), controlling for gender (not shown). *Note.* Observed indicators and error residuals are omitted for clarity. Dashed lines represent pathways that are significant for one group only. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

***Comparison of overall model to gender- and age-based models.*** A summary of all significant and non-significant pathways across the overall sample model, longitudinal sample, and gender, and age-specific models, is outlined in Appendix P.

Looking across the overall sample, age- and gender-specific models, the direct pathways from SOC, resistance to peer influence, prosocial prototypes, external-functional and external-dysfunctional emotion regulation strategies to positive youth development were consistently statistically significant (with the exception of a non-significant pathway between SOC and PYD for older-adolescents). Thus, higher SOC scores, more autonomy from peers, more positive attributions towards prosocial behaviour, greater external-functional emotional regulation (e.g., taking to others), and less external-dysfunctional emotion regulation (e.g., taking feelings out on others by shouting), consistently predicted higher PYD for Irish adolescents, regardless of age or gender. These significant pathways across models are illustrated in Appendix P.

A less consistent pattern was illustrated for the relationships between predictor variables and SOC. For instance, while internal-functional and external-dysfunctional emotional regulation strategies were significantly predictive of SOC scores in the overall model, this same pattern was only observed for the younger adolescent group. For boys, higher external-functional emotion regulation and lower external-dysfunctional emotion regulation strategies predicted higher SOC scores, while for older adolescents, greater future orientation and external-functional emotion regulation, and less external-dysfunctional emotion regulation strategies were predictive of higher SOC scores. Furthermore, none of the predictor variables were found to predict SOC scores for girls. Therefore, overall, aspects of emotion regulation were predictive of goal-directed behaviours for boys, younger adolescents, and older adolescents (see Appendix P).

Looking at the outcome of contribution, a number of significant predictors emerged. For instance, prosocial prototypes significantly predicted contribution across gender and age groups, with higher positive attributions towards prosocial behaviour predicting higher contribution behaviours. The findings also illustrated the important role of emotion regulation in predicting contribution scores, with higher external-functional emotion regulation, and lower external-dysfunctional

emotion regulation strategies, predicting higher contribution across age and gender (with the exception of external-dysfunction for girls only). In addition, future orientation also predicted contribution consistently across age and gender groups, with greater orientation towards the future predicting higher contribution. Less consistent findings also emerged. For instance, internal-functional emotion regulation strategies (e.g., reviewing thoughts or beliefs) predicted contribution for boys and younger adolescents, but not for girls or older adolescent groups. Resistance to peer influence was also a significant predictor of contribution for the younger adolescent group only. Overall, adaptive emotion regulation, future orientation, and prosocial prototypes are central to predicting contribution across gender and age groups.

Looking at risk, a consistent pattern of findings emerged for the influence of external-dysfunctional (ED) emotion regulation strategies, with higher ED predicting higher risk across age and gender groups. Prosocial prototype was also a significant predictor, with more positive attributions towards prosocial behaviour predicting fewer risky behaviours across the overall sample model, and age and gender models (with the exception of Boys only). Furthermore, future orientation was also a significant predictor of risky-behaviours in the overall model and in the girls only model, with higher orientation towards the future predicting lower risky-behaviours. Thus, while the predictive ability of future orientation and prosocial prototypes were inconsistent, external-dysfunctional emotion regulation strategies emerged as a consistent predictor of risky-behaviours across gender and age groups.

Finally, looking at depression, similar to the risky-behaviours outcome, a consistent pattern of findings emerged for the influence of ED emotion regulation strategies, with higher ED strategies predicting higher depression across age and gender groups. A number of other predictors illustrated inconsistent patterns across the overall, age- and gender-specific models. For instance, higher resistance to peer influence predicted lower depression in the overall model and for both the boys only and younger adolescent groups, but not for girls only, or older adolescents. SOC scores was also a significant predictor of depression in the overall model, and in the girls only group, with higher SOC scores predicting lower depression. SOC did not predict depression for boys only or older adolescent groups. Inconsistent patterns were also observed for external-functional (EF) and internal-functional (IF) emotion

regulation strategies, with higher EF strategies predicting lower depression in the girls only and young adolescent age groups. Surprisingly, conflicting results emerged for IF emotion regulation strategies, with higher IF strategies predicting higher depression in younger adolescents, while lower IF strategies predicted higher depression in older adolescents. Finally, prosocial prototypes predicted depression for younger adolescents only, with more positive attributions towards prosocial behaviour predicting lower depression. Thus, similar to risky-behaviours, external-dysfunctional emotion regulation was a consistent predictor of depression across age and gender groups, while SOC, autonomy from peers, prosocial prototypes, IF and EF emotion regulation strategies illustrated inconsistent patterns across age and gender groups. These findings are discussed further in the context of previous research below.

## 6.5 Discussion

The current study evaluated a new Adolescent Self-Regulation Model, examining the predictive ability of key aspects of adolescent self-regulation on positive (PYD and contribution) and negative (depression and risky-behaviours) indices of adolescent development. It was hypothesised that adolescents illustrating greater SOC scores, more positive attributions towards prosocial behaviour, more autonomy from peers, more adaptive emotion regulation, and greater orientation towards the future would report higher PYD and contribution, and lower depressive symptoms and risky-behaviours. Furthermore, it was hypothesised that, based on dual-process models of decision-making, the predictor variables would influence outcomes both directly and indirectly via SOC.

In general, the hypothesised direct influence of SOC, autonomy from peers, prosocial prototypes, external-functional (EF) emotion regulation and external-dysfunctional (ED) emotion regulation strategies, on the outcome of PYD, were supported, explaining 87-93% of the variance across age- and gender specific models. Building on previous research that highlighted the role of SOC (Gestsdottir & Lerner, 2007; Gestsdottir & Lerner, 2008) and hopeful future expectations (Schmid et al., 2011a; Schmid et al., 2011b), in predicting the healthy, positive development of adolescents, the current research illustrated the role of additional individual factors that influence adaptive developmental regulations. For instance,



prosocial prototype was consistently found to predict PYD across age and gender groups. This is in line with previous research proposing that the values that adolescents hold can guide their behaviour (Eccles & Barber, 1999). Adolescents are more likely to participate in behaviours that sustain valued aspects of their identities (Haggard & Williams, 1992). For example, if an individual perceives themselves as “sporty”, they are more likely to engage in behaviour that maintains that identity (e.g., playing basketball). Similarly, the prototype/willingness model outlines that valuing the perceived characteristics associated with a behaviour (e.g., “cool”, “smart”), motivates an adolescent to engage in the behaviour. Thus, the current results are consistent with previous research showing that adolescents, who rated the characteristics associated with prosocial behaviour (e.g., friendly, smart, popular, disrespectful [reverse-scored], boring [reverse-scored]) more favourably, also reported more positive, healthy development (i.e., higher PYD and contribution scores).

The hypothesised role of resistance to peer influence on adaptive developmental regulations was also supported. Greater autonomy from peers was consistently found to predict higher PYD scores across age and gender groups. This supports previous research suggesting that autonomous decision-making is related to greater well-being (Ryan, Patrick, Deci, & Williams, 2008). Adolescent’s value systems are likely to be influenced by a number of socialisation agents, from peers, parents and culture (Arnett, 1995; Lytton & Romney, 1991; Prinstein & Dodge, 2008). However, the ability to make autonomous decisions in the presence of peers has been highlighted as a particularly important predictor of adolescent behaviour (Prinstein & Dodge, 2008). For instance, one of the most consistent predictors of adolescent risky-behaviours is the extent to which adolescent’s peers engagement in risky behaviours (Prinstein & Dodge, 2008). While the role of autonomy from peers in positive development may be different, the current findings suggest that autonomy from peers may also be important for positive development. It has also been suggested that greater autonomy from peers is related to psychosocial maturity, with psychosocial maturity associated with positive developmental outcomes such as an increased sense of responsibility, increased self-awareness, and increased impulse control (Steinberg & Monahan, 2007; Sumter et al., 2009). Thus, the current study

supports the role of autonomy from peers as a key individual factor for positive, healthy adolescent development.

The hypothesised direct relationships between emotion regulation strategies and adaptive developmental regulations were also broadly supported. Higher external-functional (EF) emotion regulation strategies (e.g., seeking physical comfort from friends or family), and lower external-dysfunctional (ED) emotion regulation strategies (e.g., lashing out at others), consistently predicted higher PYD and contribution across age and gender groups. This supports previous research that showed a positive relationship between adaptive emotion regulation strategies and subjective well-being, quality of life, problem-solving and resilience (Egloff, Schmukle, Burns, & Schwerdtfeger, 2006; Phillips & Power, 2007). Previous research has advocated for the role of emotion regulation as a crucial ingredient in successful development (Eisenberg et al., 2007). The current research supports this stance as greater adaptive, and fewer maladaptive, emotion regulation strategies predicted PYD and contribution.

The current study also hypothesised indirect influences on developmental regulations via SOC. Some support was observed for the hypothesised relationships. For instance, internal-functional (IF) and external-dysfunctional (ED) emotion regulation strategies were found to predict SOC, and subsequently indirectly impact PYD. The influence of IF and ED emotion regulation on SOC is in line with previous research stipulating the role of emotion regulations in motivating the conscious modification of experience, behaviour, expression, or the emotion eliciting situation (Eisenberg et al., 1999). Furthermore, the differential role of adaptive and maladaptive emotion regulation in goal-directed behaviours was supported. For example, previous research suggested that adaptive emotion regulation, such as internal-functional emotion regulation strategies, would facilitate goal-directed behaviours, while maladaptive emotion regulations, such as external-dysfunctional strategies, would block or reject information provided by emotions and negatively influence goal-directed behaviours (Power & Dalgleish, 2007). This is in line with the functional account of emotions, which stipulates that emotions provide useful information about situations and enhance the individual's ability to deal with them (Power & Dalgleish, 2007). For instance, the experience of anxiety alerts an individual to a threat to their goals or plans, while the experience of happiness

signals that individuals are acting in line with their goals and plans (Power & Dalgleish, 2007). Thus, adaptive emotion regulation processes the emotion and facilitates goal-directed behaviour, while maladaptive emotion regulation may prevent the development of tolerance to emotions, leading to increased emotional distress (Chapman, Specht, & Cellucci, 2005; Linehan, 1993). Thus, emotion regulation may be a key factor in facilitating goal-directed behaviour, and subsequent adaptive developmental regulations. The inconsistent influence of other predictors on SOC must also be noted. Different patterns emerged across age and gender groups. For example, greater external-functional emotion regulation and fewer external-dysfunctional emotion regulation strategies predicted higher SOC scores in the boys only model, while for older adolescents, higher future orientation, greater external-functional emotion regulation strategies, and fewer external-dysfunctional emotion regulation strategies, predicted higher SOC scores. External emotion regulation strategies, such as talking to someone about their feelings (adaptive), or shouting or arguing (maladaptive), may be viewed as particularly important for boys, given the potentially negative effect of adherence to masculine norms such as emotion restriction (O'Neill, 2008). Furthermore, the significant relationship between future orientation and PYD in older adolescents may represent the increased salience of current decision-making on future goals (e.g., choosing subjects for examination and projected future career paths). However, further research is needed to clarify the relationships between the predictors in the current model and SOC.

In terms of predicting the negative indices of development (i.e., risky-behaviour and depression), mixed results emerged across age and gender groups. The hypothesised relationship between higher external-dysfunctional emotion regulation strategies, and increased risky-behaviours and depression across age and gender groups, was consistently supported. This supports previous research delineating the role of maladaptive emotion regulation in psychological distress and problem behaviour (Betts, Gullone, & Allen, 2009; Power & Dalgleish, 2007). In addition, higher prosocial prototype scores significantly predicted lower risky-behaviours in the girls only group, and both younger and older age groups, but not in the boys only group. However, few other consistent results emerged. For example the relationship between adaptive emotion regulation strategies and negative

outcomes were inconsistent, with higher external-functional emotion regulation strategies predicting lower depression in both the girls-only group and the younger adolescent group, but not the boys-only or older adolescent groups. These inconsistent results may suggest that pathways to depression and risky-behaviours are different across gender and age-groups. For example, previous research has highlighted different developmental trajectories in antisocial behaviour and depressive symptoms for boys and girls (Silverthorn & Frick, 1999). Specifically, boys are found to engage in antisocial behaviour at a younger age compared to girls, while adolescent girls are more likely to evince depressive symptoms compared to boys (Silverthorn & Frick, 1999; Galambos et al., 2009; Leadbeater, et al., 1999). In addition to gender differences, the current model also predicted greater variance in risky-behaviours (overall sample model = 59%), compared to depression (overall sample model = 18%). The predictive ability of the current model for depression may be increased by including interpersonal factors that have been linked to depression, such as the importance of relationships during adolescence and interpersonal stress (Larson & Ham, 1993; Rudolph, 2002). Thus, future research may include an assessment of how adolescents regulate interpersonal stress, and subsequently illuminate the gender-specific factors that may predict both risky-behaviours and depression in boys and girls.

Overall, adolescence is a period of development where the young person experiences changing opportunities (e.g., new academic settings), challenges (e.g., peer pressure to engage in risky behaviours), and expectations of the social context (e.g., selection of educational paths). Furthermore, during this development period, there are increased expectations that the young person is responsible for their own development. Thus, understanding adolescent self-regulation is vital for understanding successful healthy development in adolescence. The current research significantly expands our knowledge of adolescent self-regulation and the subsequent influence on positive outcomes. While previous research has highlighted intentional self-regulation, as operationalised by the SOC model, as the primary mechanism of adaptive behaviour (e.g., Lerner et al., 2005; Gestsdottir & Lerner, 2007), the current model uses a dual-process framework to expand and illuminate direct and indirect self-regulatory influences on positive functioning. The current study illustrates that in addition to SOC, autonomy from peers, positive attributions

towards prosocial behaviour, and adaptive emotion regulation strategies can also significantly influence positive functioning during adolescence. In addition, emotion regulation strategies, adaptive and maladaptive, can influence SOC behaviours. Thus, the current study highlights a number of factors that are important for understanding the successful development of Irish adolescents.

**6.5.1 Limitations.** A number of limitations and concerns should be addressed. First, concerns may be raised regarding a number of measurement issues. For instance, a number of adjustments were made to measures following confirmatory factor analysis. These included the deletion of items and the addition of covariances. For example, the 18-item three-factor SOC model was found to be represented best in the current study by an 11-item, three-factor model. This is in contrast to the 18-item three-factor SOC measure (Gestsdottir et al., 2009), and the 24-item four-factor SOC measure (Gestsdottir et al., 2010) that was found to fit adequately for a large sample of adolescence in the US. These differences may be due to two factors. First, the current study used a wide age-range of adolescents when conducting the measurement model (i.e., 12-19 years), compared to previous research assessing SOC in middle (e.g., 14-16 years; Gestsdottir et al., 2009) or late adolescence (17-19 years; Gestsdottir et al., 2010). Second, there may be cultural differences in the meaning and interpretation of items on the measure of intentional self-regulation. For example, looking at a “Selection” subscale item, a SOC reply is “I consider exactly what is important to me”, while a non-SOC reply in the forced choice format is “I take things as they come and carry on from there”. In an Irish context, this non-SOC reply may be interpreted as acceptance and flexibility. These strategies may be valued highly in certain contexts, in comparison to rigidly sticking to previously made plans or achieving one goal and not others. Little research has compared the structure of the SOC measure of intentional self-regulation across populations. For example, a 10-item SOC measure has been found to be appropriate in a Swedish sample with a wide age-range (19-85 years). Therefore, future research should assess the invariance of the SOC model across cultures to examine whether the factor structure is stable.

Second, a related concern in the current study is regarding the issue of deleting items from scales. This practice is common in confirmatory factor analysis as it indicates that an item is not making a significant impact on the desired construct

(i.e., is redundant), or when an item is not independent indicator for a stipulated construct and instead makes a significant contribution to another factor (i.e., cross-loading; Byrne, 2010). For example, four items were removed from the emotion regulation scale for significant cross-loadings. However, the removal of items raises questions about whether the modified construct maintains the measurement properties of the original measure (i.e., is emotion regulation still measuring emotion regulation). Furthermore, it is necessary to highlight the issue of generalizability when modifying constructs. The modification of constructs may be influenced by sample-specific characteristics (e.g., rural participants). Future research should further test the hypothesised relationships in the Adolescent Self-Regulation Model to examine whether they are influenced by changes to the measurement constructs or sample-specific characteristics.

Third, the large percentage of variance explained in PYD across models is notable (i.e., 87-93%). Although the model fit was adequate, it may be possible that some variance is shared between the predictors and the PYD outcome measure. This may be due to a number of factors, including conceptual overlap (e.g., between prosocial prototypes and PYD), or shared-method variance (e.g., all measures were self-report). While the model fit indices of CFI and TLI may be problematic due to the assumption that all latent variables are uncorrelated, these low values may also be influenced by issues of conceptual overlap or shared method variance within the model. However, given that substantive model misspecification would result in a poor fitting model (Byrne, 2010), and that a satisfactory chi-square to degrees of freedom ratio, RMSEA and SRMR values are observed, the current results may be deemed valid. Future research should be conducted in order to replicate the current findings and improve model fit.

Fourth, the hypothesised Adolescent Self-Regulation Model illustrated a number of individual factors that predict positive outcomes. However, a number of predictors of SOC were non-significant. For example, autonomy from peers did not predict SOC behaviours, while future orientation and emotion regulation strategies were inconsistent predictors across groups. Although the current model used a dual-process framework to assess direct and indirect influences on outcomes, further research is required to examine the predictors of adolescent cognitive and behavioural intentional self-regulations. The significant relationship between future

orientation and SOC in older adolescents may represent the increased salience of current decisions (e.g., choosing career pathways after school) on future consequences for older adolescents choosing a life path. The significant relationship between emotion regulation strategies and SOC is in line with the central position of emotion regulation in definitions of self-regulation (Moilanen, 2007). However, it is likely that these strategies may be used differently depending on the context (e.g., in a classroom under supervision from teachers vs. outside a pub being offered an alcoholic drink). Future research, using a random sampling of behaviour indicative of PYD, objective measures of emotional reactivity (e.g., galvanic skin response), and measurements of emotion regulation strategies, could assess moment to moment emotional regulation processes that are likely to influence intentional self-regulations during adolescence. This could be analysed using time-series analysis (McCleary & Hay, 1980) to explore the interacting dynamic between appraisal of emotions, use of emotion regulation strategy, subsequent behaviour, and appraisal of emotional outcomes after behaviour.

Overall, the proposed Adolescent Self-Regulation Model was an adequate fit to the data and explained a high proportion of the variance in positive outcomes. Further discussion of the implications of this study with regard to theory and practice will be provided in Chapter 8.

## 7. Chapter Seven

### Study 2C: Analysis of Time One and Time Two Data

#### 7.1 Chapter Overview

The purpose of this chapter were fourfold: 1) to further assess the psychometric properties of the Five Cs model of PYD; 2) to assess the predictive ability of the adolescent self-regulation model on positive and negative indices of development 12-months later; 3) to test the stability of PYD over 12-months at a group-level and an individual-level; and 4) to examine the characteristics associated with individual-level change in PYD over 12-months.

#### 7.2 Introduction

Thus far, the examination of the Five Cs model of PYD in Irish adolescents has been conducted at a cross-sectional level. As *development* necessitates the passing of time to allow interactions to occur between individuals and their context (i.e., change), cross-sectional research does not capture positive development, but rather the concept of positive-functioning, defined here as the measure of healthy functioning at any one point in time (Lerner, Dowling, & Anderson, 2003). While it is useful to assess the necessary ingredients of positive functioning, only by looking at positive functioning over time (i.e., at two [or more] time-points) can positive *development* (i.e., *thriving*) be assessed.

It is recommended that, in the absence of sufficient theory, the selection of appropriate ontogenetic observation points (i.e., data-collection points) should be made on the basis of empirical generalisations (Lerner, Schwartz, & Phelps, 2009). Previous research on the development of the PYD measure used one-year longitudinal data-points (e.g., Bowers et al., 2010; Phelps et al., 2009). In addition, practical difficulties negated an increase in data-collection points. For example, difficulties were highlighted in accessing students in schools more than once during an academic year. Therefore, due to theoretical and pragmatic reasons, a 12-month follow-up was deemed appropriate.

A primary goal of the current study was to further assess the psychometric properties of the Five Cs model of PYD in Irish adolescents. This was assessed in four ways. First, the Five Cs model of PYD assessed in Study 2A was retested using



time 2 data only. As the fit of a model in Confirmatory Factor Analysis (CFA) depends on the discrepancy between the sample covariance matrix (i.e., the matrix derived from the sample data), and the implied covariance matrix (i.e., the matrix implied by the specified model), the fit of a model to the observed data is sample specific (Bollen, 1990). Retesting the Five Cs model enables the testing of a model on a different dataset from that which it was constructed, thus overcoming any potential problem of over-estimating the degree of model fit due to ‘over-fitting’ a model to a particular set of data (Stride, 2009). Therefore, in order to provide further evidence of the structure of the Five Cs model of PYD in Irish adolescents, the current study retested the Five Cs model using time 2 data only.

Second, an additional caveat of using time 2 data is that at the second data-collection point, it was possible to include changes that were made to the PYD measure over the 12-month study period (Phelps et al., 2009; Bowers et al., 2010). Specifically, as previously outlined, a revision of the PYD measure was conducted, where the subscale of athletic competence as a subscale of competence was removed, and the subscale of physical appearance as a subscale of confidence was included (Bowers et al., 2010). In Ireland, research shows a high proportion of participation in sports and exercise (44.5%), particularly among 16-19 year olds (80.3%; Irish Sports Monitor, 2011). While gender differences exist (92.5% participation for males; 67.7% participation for females), adolescents are the age group most likely to participate in sport in Ireland. In comparison to figures from the US (where the Five Cs Model was developed), the overall sport participation rate is significantly lower (28.67%; Physical Activity Council, 2013). Looking specifically at adolescents, 59% of 10-17 year olds in the US participated in sports (National Survey of Children’s Health, 2005). This is significantly lower than Irish figures for 16-19 year old adolescents (80.3%). Therefore, the findings that athletic competence was not a valid indicator of competence in a North American sample may not generalise to an Irish context. In our dataset, both the athletic competence and physical appearance subscale were included at time 2. Consequently, CFA fit indices are used to test each model to examine the utility of Bowers’ modification; first, the model depicted in Study 2A is tested (including athletic competence; Phelps et al., 2009), followed by a model including the physical appearance subscale as an indicator of confidence (Bowers et al., 2010).

A third approach to assessing the psychometric properties of the Five Cs model of PYD was to assess the validity of the PYD measure by examining the degree to which PYD scores are susceptible to social desirability response bias; that is, the tendency of individuals to overestimate socially desirable characteristics (e.g., helping others), and underestimate less socially desirable characteristics (e.g., being selfish). While a measure of PYD aims to assess the strengths-based orientation of youth, a number of PYD items attempt to measure behaviours that may be considered as socially desirable (e.g., having friends, being nice, caring about others). Furthermore, self-report measures are particularly vulnerable to social desirability tendencies (Crowne & Marlowe, 1964). Therefore, in order to assess the relationship between PYD scores and social desirability, a brief measure of social desirability was included at time 2. High correlations would suggest that PYD scores are influenced by the desire to portray socially desirable behaviours, while low-correlations would add support to the use of the Five Cs as a valid measure of PYD.

The fourth and final approach to further assessing the psychometric properties of the Five Cs PYD measure is to also test the predictive validity of the Five Cs measure using time 1 and time 2 data. It is assumed that the development of PYD will result in higher contribution, and lower negative developmental outcomes, such as depression and risky-behaviours, over time. However, conflicting results (Lewin-Bizan et al., 2010; Jellicic et al., 2007) suggest a possible null effect. By using time 2 data, it is possible to examine the long-term predictive ability of PYD on outcomes of contribution, risky-behaviours, and depression in Irish adolescents. Therefore, in the current study, the predictive validity of the Five Cs PYD measure is assessed using time 1 PYD scores and time 2 outcome scores.

The second aim of this study was to assess the predictive ability of the adolescent self-regulation model on positive and negative indices of development 12-months later. The previous study (Study 2B) assessed the cross-sectional relationships in the adolescent self-regulation model; where prosocial values, resistance to peer influence, emotion regulation, future orientation and SOC scores predicted outcomes of PYD, contribution, depression, and risky-behaviours. Using outcome data from time 2 allows the investigation of the long-term influence of adolescent self-regulation on positive and negative indices of development. Thus,

the model specified in study 2B is re-assessed using time 2 outcomes (i.e., PYD, contribution, risky-behaviours and depression).

The third aim of the current study was to assess change in PYD over time using time 1 and time 2 data. This consisted of three approaches. The first level of change is to assess the stability of PYD factors over 12-months at group-level. As adolescence is a period of change, aspects of PYD are also likely to change during this time. For instance, cross-sectional data on Irish adolescents aged 12-19 years showed a decreasing trend in older adolescence of self-reported self-esteem, optimism, social support, and satisfaction with life, and a parallel increase in self-reported depression and anxiety (Dooley & Fitzgerald, 2012). In addition, differences may also be found between younger and older adolescents, as social competence has been shown to increase throughout the late teens, but not early adolescence (Eisenberg et al., 2005). Thus, the stability of group-level PYD scores over 12-months is examined, for the overall adolescent group, and for younger- and older-adolescents.

The second level of change is to assess PYD scores over 12-months at an individual-level. Variable-orientated analyses provide information about change aggregated across individuals, as well as the correlates of change. This approach focuses on average change, and is thus not the best method for studying individual stability and change (Nesselroade, 1992). Person-orientated analysis allows for the analysis of patterns of intraindividual change. Using person-orientated analyses to assess individual-level differences in stability of PYD can identify groups with similar experiences of positive development (Masten et al., 2004). For example, previous research following adolescents aged 10-15 years old, found four distinct trajectories of PYD scores over time; decreasing, increasing-to-stable-moderate, increasing/decreasing, and increasing-to-stable-high (Lewin-Bizan et al., 2010). This indicates that not all youth follow the same pattern of change as they move through adolescence. Thus, person-orientated analyses were used to investigate the intraindividual differences in stability of PYD scores across 12-months. Based on previous research investigating positive development over time, it was expected that both stable and changing patterns of positive youth development would emerge (e.g., Oosterle et al., 2008; Jelicic et al., 2007; Zimmerman et al., 2008; Hawkins et al., 2011).

Finally, this study also examined the individual characteristics associated with levels of change over 12-months. Previous research has characterised optimal development trajectories in terms of a number of factors, with gender (i.e., female), higher SOC scores and positive parenting (i.e., maternal warmth, parental monitoring, and parental involvement in school) predicting higher PYD over time (Bowers et al., 2011; Lewin-Bizan, et al., 2010; Schmid et al., 2011a; Zimmerman et al., 2008). However, a number of the adolescent self-regulation factors are likely to identify different patterns of change in positive functioning over time. For example, resistance to peer influence has been linked to the emergence and development of antisocial behaviour (Dishion & Patterson, 2006), and therefore may inhibit the development of anti-social behaviour over time. Furthermore, future orientation may also predict optimal PYD development, as previous research has shown that the related concept of hopeful future expectations predicted optimal PYD over time (Schmid et al., 2011a). In addition, adaptive emotion regulation has been highlighted as a crucial ingredient for successful development (Eisenberg, et al., 2007), as individuals who lack the ability to successfully regulate emotions misidentify and misdirect their emotional experience, thus hindering their ability to function adaptively (Kostiuk & Fouts, 2002). Previous research has also illustrated a positive relationship between adaptive emotion regulation and prosocial behaviour (Silk et al., 2003). Therefore the use of adaptive (and maladaptive) emotion regulation strategies may predict PYD development over time.

Previous research has also illustrated that more positive parenting predicted optimal PYD over time (Bowers et al., 2011). This is in line with previous research that observed that parenting style characterised by warm, sensitive, and responsive interactions, has been positively associated with a variety of positive adolescent outcomes such as school performance, social competence and prosocial behaviour (Collins & Steinberg, 2006; Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994), and negatively associated with outcomes such as substance use, aggression, delinquency (Baumrind, 1991; Steinberg et al., 1994). Therefore, parenting style was measured at time 2, and hypothesised to be related to membership of optimal PYD over 12-months.

Thus, in addition to identifying the different patterns of change in PYD, the current research will follow recommendations of previous research and further

examine the characteristics that could explain placement in a particular developmental trajectory (Bowers et al., 2011). It is important to examine the role of these individual factors in determining which developmental path young people follow, as it can subsequently be used to inform future research aimed at enhancing resilience and promoting positive development.

### 7.3 Method

**7.3.1 Participants.** At Time 1, a total of 672 respondents from 11 post-primary schools located in Mid- and North-West Ireland participated in the research (see Chapter 6 for detailed description of Time 1 sample). Approximately twelve months later, youth who participated at time 1 were retested. The longitudinal sample consists of a total of 327 participants (53.5% male,  $M$  age = 16.52,  $SD$  = 1.49). Students from across all stages of the Irish Post-Primary school system took part in the research, with 2<sup>nd</sup> year ( $n$  = 46; 14.1%), 3<sup>rd</sup> year ( $n$  = 76; 23.2%), 4<sup>th</sup> year ( $n$  = 23; 7%), 5<sup>th</sup> year ( $n$  = 98; 30%) and 6<sup>th</sup> year ( $n$  = 83; 25.4%) included. The majority of students were identified as “Born in Ireland” ( $n$  = 213, 65.1%), while 10.1% indicated other (e.g., England;  $n$  = 30). A further 24.8% ( $n$  = 81) of participants did not answer this question. In terms of ethnicity, the majority were identified as “White” ( $n$  = 243, 74.3%), while a further 0.3% ( $n$  = 1) identified as “Chinese”, “Asian” and “Other” respectively. A further 24.8% ( $n$  = 81) of participants did not complete this question. Demographic information also indicated that 22.6% of participants indicated living in an “Urban” area ( $n$  = 74), while 71.6% ( $n$  = 234) lived in rural areas. Missing data accounted for 5.8% ( $n$  = 19) of respondents. Mother’s education was also reported, and was deemed well distributed (12.8% Junior Certificate or less, 21.7% Leaving Certificate, 15% sub-degree, 9.8% primary degree, 13.5% professional qualification, 0.6% “Other”, 26.6% missing).

**Attrition.** Attrition at 12-month follow-up was not randomly distributed across schools. At time 2, two principals withdrew consent for their schools to participate. Thus, the students in these schools were categorised as “dropped out” without having the opportunity to ask if they wanted to remain in the study. In total, 112 students (16.67% of total time 1 sample) were lost from time 1 to time 2 due to the absence of principal permission. In turn, attrition from time 1 to time 2 for

students who were allowed to remain in the study was an average 34.15%. This ranged from 5% to 55.4% between different schools. The wide ranging attrition rate was due to a number of factors. For example, in some schools, teachers used group text reminders to remind students about participation the study, whereas in other schools text reminders were not used.

Two groups from time 1 (i.e., those who continued into time 2 and those who did not), were compared on a number of background and outcome variables. A significant difference was found in terms of gender, with more males ( $n = 212$ ) than females ( $n = 133$ ) in the time 1 only group ( $\chi^2[1] = 4.14, p = .042$ ). In terms of outcome variables measured at time 1, a significant difference was found for contribution scores,  $t(547) = -1.97, p = .049$ , with the longitudinal sample (time 1 and time 2) significantly higher ( $M = 52.30, SD = 15.10$ ) compared to the attrition sample ( $M = 49.82, SD = 14.36$ ). No other differences were found between groups ( $ps > .05$ ).

**7.3.2 Procedure.** The procedure for obtaining ethical approval and sampling schools is detailed in Chapter 4 (see section 4.7). This procedure will detail the process for data collection at time 2. The 11 secondary schools in Mid-, Western, and North-Western Republic of Ireland that agreed to take part in the research at time 1 were approached approximately three months before time 2 follow-up. Schools were contacted initially by a letter to the Principal and then by telephone. Following approval from principal of the school, a teacher was designated (religion or guidance counsellor) to oversee the conduct of the study. Consent for participation at time 2 was obtained at time 1. Information sheets and parental questionnaires (for those who did not return the parental questionnaire at time 1) were distributed to all students who participated at time 1. The assigned teacher went to each class within a week to remind participants to return the parental questionnaires to the school.

Approximately 12-months after time 1 ( $M = 12.41$  months,  $SD = 1.34$ ), the questionnaire battery was distributed to students during an assigned class period. Participants were reminded that they could skip any question they did not wish to answer. The questionnaire battery consisted of a demographic questionnaire, the PYD scale, the SOC measure, prosocial values, resistance to peer influence, social

desirability, emotion regulation, parental style, contribution, depression, risk-taking and future orientation. On completion, participants were instructed to seal the questionnaire battery in the provided envelope. The questionnaire took approximately 35 to 45 minutes to complete.

**7.3.3 Measures.** Analyses at time 2 included measures from time 1 (described in Chapter 4), and measures from time 2. As scale reliability is sample specific, the list of measures assessed at time 1 and time 2 and their corresponding internal reliabilities are detailed below.

***Intentional self-regulation.*** Intentional self-Regulation was measured using an 11-item Selection, Optimisation, and Compensation (SOC) measure (Freund & Baltes, 2002). The composite reliability ( $\omega$ ; due to dichotomous items of the scale) of the SOC measure was .75 for the longitudinal sample.

***Prosocial prototypes.*** Prosocial prototypes were measured using the prosocial prototype measure developed in study one and detailed in Section 4.3. The internal reliability for both the positive prototype ( $\alpha = .81$ , 95% CI = .78 – .84) and the negative prototype factors ( $\alpha = .81$ , 95% CI = .78 – .84) were good for the longitudinal sample.

***Peer influence.*** Peer influence was measured using the resistance to peer influence (RPI) measure developed by Steinberg and Monahan (2007). The reliability ( $\alpha$ ) of the RPI measure was .72 (95% CI = .68 – .77) for the time 2 sample.

***Emotion regulation.*** Emotion Regulation was measured using the regulation of emotions questionnaire (REQ; Phillips & Power, 2007). The internal reliability of the REQ subscales for the time 2 sample were .76 (95% CI = .72 – .80; *External-Dysfunctional*), .78 (95% CI = .74 – .82; *External-Functional*), .60 (95% CI = .51 – .67; *Internal-Dysfunctional*), and .80 (95% CI = .77 – .83; *Internal-Functional*).

***Future Orientation.*** Future Orientation was measured using the future orientation inventory (FOI; Cauffman & Woolard, 1999). The internal reliability of the FOI measure for the longitudinal sample was .66 (95% CI = .60 – .71).

***Time 2 outcomes.*** Intentional self-regulation, resistance to peer influence, prosocial prototypes, emotion regulation, and future orientation measured at time 1

were used to predict four outcomes at time 2: Positive Youth Development (PYD), depression, contribution, and risky behaviours. Each of the outcomes are discussed below.

***Positive youth development.*** The Positive Youth Development “Five Cs” measure for grade 8-12 (Lerner et al., 2005; Bowers et al., 2010) was used to assess PYD at time 2. The subscale of physical appearance was added to the measure as a subscale of confidence as recommended (Bowers et al., 2010). A sample item for the physical appearance subscale is “some teenagers are not happy with the way they look BUT other teenagers are happy with the way they look”. Each item was scored from one to four, with four reflecting higher perceived physical appearance. The confidence subscale including the physical appearance subscale previously illustrated good reliability, ranging from .70 to .92 for Grades 5-12 (Geldhof et al., 2013; approximately 10-18 years old). In the current sample, time two subscale reliabilities were .79 (95% CI = .75 – .83) for caring, .70 (95% CI = .64 – .75) for character, .79 (95% CI = .75 – .83) for confidence, .46 (95% CI = .35 – .56) for competence, and .74 (95% CI = .69 – .78) for connection.

***Depression.*** Depression was measured by the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Cronbach’s alpha for the current sample at time 2 was .89 (95% CI = .87 – .91) for depressed affect, .76 (95% CI = .72 – .80) for somatic complaints, .76 (95% CI = .71 – .80) for positive affect, and inter-item correlation for interpersonal problems was .55.

***Contribution.*** Contribution was measured using two equally weighted subscales of ideology and actions derived by Lerner and colleagues (2005). Cronbach’s alpha was .77 (95% CI = .73 – .80) at time 2.

***Risky-behaviours.*** Risky behaviours were measured using scales of substance use and delinquency derived from the PSL-AB and the Monitoring the Future (2000) questionnaires. Cronbach’s alpha at time 2 was .76 (95% CI = .72 – .80).

***Additional Measures.*** Two additional relevant measures were added at time 2 data collection.



***Social desirability.*** The Brief Social Desirability Scale (BSDS; Haghghat, 2007) was used to measure social desirability. Based on the longer Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964), this four-item measure assesses individuals' tendency to give socially desirable answers to questionnaire items. An example item is "Do you always practice what you preach?" The four-items are answered on a "yes" or "no" forced-choice format. Socially desirable responses are summed, with scores ranging from 0-4. Previous research has shown the BSDS as internally reliable (Cronbach's  $\alpha = .60$ ). In the current sample, internal reliability was low ( $\alpha = .25$ ; 95% CI = .11 – .38). This may be due to the low number of items.

***Parental Style.*** Parenting style was measured using the Parenting Style Inventory II (PIS-II; Darling & Toyokawa, 1997). This 15-item measure assesses three subscales of maternal parenting style; demandingness (5-items; e.g., "My mother gives me a lot of freedom"); emotional responsiveness (5-items; e.g., "My mother spends time just talking to me"); and psychological autonomy-granting (5-items; e.g., "My mother lets me get away with things"). Previous research has found the internal validity of the subscales to be good (ranging from .72[demandingness] to .75 [autonomy-granting]). In the current study, cronbach's alpha was .64 (95% CI = .57 – .70) for demandingness, .74 (95% CI = .70 – .79) for emotional responsiveness, and .64 (95% CI = .58 – .70) for autonomy-granting.

***Data Management.*** A total of 327 participants completed time 1 and time 2 measures. The sample was subjected to Missing Value Analysis (MVU) using PASW 20 (IBM, 2011). Among the 327 participants, there were nominal to modest amounts of missing item-level data (ranging from 0% - 29.0%). Little's missing completely at random test (MCAR) was not statistically significant ( $\chi^2 [680] = 677.80, p = .517$ ) suggesting the data were missing completely at random (MCAR). Thus, the expectation maximization (EM) algorithm for imputing missing data was employed.

## 7.4 Results

**7.4.1 Further Assessment of the Psychometric Properties of the Five Cs Model.** The psychometric properties of the Five Cs model of PYD were assessed in a number of ways; a) the Five Cs model of PYD was retested using time 2 data only;

b) Modifications made to the Five Cs measure of PYD were assessed; c) the relationship between PYD scores and social desirability was evaluated; and d) the predictive ability of time 1 PYD scores on time 2 outcomes of contribution, risky-behaviours, and depression was examined.

***Retesting the Five Cs Model of PYD.*** In order to provide further evidence of the structure of the Five Cs model in Irish adolescents, a CFA was conducted using time 2 data only. The CFA of the Five Cs model of PYD previously established in Irish adolescents illustrated an adequate fit using time 2 data,  $\chi^2_{(87, n = 327)} = 260.26$ ,  $p < .001$ ,  $Q = 2.99$ , CFI = .90, TLI = .86, RMSEA = .07 (90% CI = .06 - .08), SRMR = .07, AIC = 358.26. Therefore, the Five Cs Model of PYD is appropriate in Irish adolescents.

***Testing the Five Cs modifications.*** In order to test the modifications made to the Five C's model by Bowers and colleagues (2010), a second CFA model was constructed with physical appearance as a subscale of confidence, and the removal of athletic competence from the competence factor. The CFA of the Five Cs model of PYD using the physical appearance subscale resulted in a poor model fit,  $\chi^2_{(87, n = 327)} = 280.23$ ,  $p < .001$ ,  $Q = 3.22$ , CFI = .89, TLI = .86, RMSEA = .082 (90% CI = .071 - .093), SRMR = .08, AIC = 376.23. Fit indices, such as an increase in absolute fit (i.e.,  $Q$ ), a RMSEA value of above .08, and an increase in AIC ( $\Delta$  AIC = 17.97), indicate that the Five Cs model depicted in Chapter 5 (i.e., including athletic competence, not including physical appearance) was a better fit. This model of PYD was therefore retained.

Table 7.1

*Summary of Time 1 predictor and Time 2 outcome correlations (N = 327).*

Var	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1 T2-Age	--																												
2 T1-SOC11	-.11 <sup>a</sup>	--																											
3 T1-RPI	.11 <sup>a</sup>	.11 <sup>a</sup>	--																										
4 T1-Pos	-.07	.20 <sup>c</sup>	.10	--																									
5 T1-Neg	.03	-.11 <sup>a</sup>	-.22 <sup>c</sup>	-.25 <sup>c</sup>	--																								
6 T1-EF	.01	.19 <sup>b</sup>	.15 <sup>b</sup>	.35 <sup>c</sup>	-.12 <sup>a</sup>	--																							
7 T1-ED	.15	-.19 <sup>b</sup>	-.12 <sup>a</sup>	-.15 <sup>b</sup>	.28 <sup>c</sup>	-.10	---																						
8 T1-IF	.04	.26 <sup>c</sup>	.05	.34 <sup>c</sup>	-.02	.36 <sup>c</sup>	-.01	---																					
9 T1-ID	.07	-.17 <sup>b</sup>	.04	-.02	.19 <sup>b</sup>	.00	.38 <sup>c</sup>	.16 <sup>b</sup>	---																				
10 T1-FOI	.04	.26 <sup>c</sup>	.15 <sup>b</sup>	.10	-.15 <sup>b</sup>	.26 <sup>c</sup>	-.00	.38 <sup>c</sup>	.09	---																			
11 T2-PYD	-.07	.34 <sup>c</sup>	.25 <sup>c</sup>	.40 <sup>c</sup>	-.24 <sup>c</sup>	.34 <sup>c</sup>	-.22 <sup>c</sup>	.37 <sup>c</sup>	-.14 <sup>a</sup>	.31 <sup>c</sup>	---																		
12 T2-Caring	-.03	.10	.14 <sup>a</sup>	.35 <sup>c</sup>	-.12 <sup>a</sup>	.31 <sup>c</sup>	-.13 <sup>a</sup>	.25 <sup>c</sup>	.11 <sup>a</sup>	.24 <sup>c</sup>	.60 <sup>c</sup>	---																	
13 T2-Char	-.04	.31 <sup>c</sup>	.29 <sup>c</sup>	.33 <sup>c</sup>	-.18 <sup>b</sup>	.31 <sup>c</sup>	-.22 <sup>c</sup>	.38 <sup>c</sup>	.06	.28 <sup>c</sup>	.77 <sup>c</sup>	.55 <sup>c</sup>	---																

Table 7.1

*Summary of Time 1 predictor and Time 2 outcome correlations continued*

Var	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
14 T2-Comp	-.08	.23 <sup>c</sup>	.16 <sup>b</sup>	.14 <sup>a</sup>	-.13 <sup>a</sup>	.06	-.05	.24 <sup>c</sup>	-.22 <sup>c</sup>	.16 <sup>b</sup>	.64 <sup>c</sup>	.06	.28 <sup>c</sup>	---															
15 T2-Confid	-.07	.25 <sup>c</sup>	.13 <sup>a</sup>	.15 <sup>b</sup>	-.12 <sup>a</sup>	.14 <sup>a</sup>	-.13 <sup>a</sup>	.12 <sup>a</sup>	-.24 <sup>c</sup>	.14 <sup>a</sup>	.68 <sup>c</sup>	.06	.30 <sup>c</sup>	.54 <sup>c</sup>	---														
16 T2-Conn	-.03	.28 <sup>c</sup>	.16 <sup>b</sup>	.38 <sup>c</sup>	-.29 <sup>c</sup>	.35 <sup>c</sup>	-.22 <sup>c</sup>	.30 <sup>c</sup>	-.19 <sup>c</sup>	.24 <sup>c</sup>	.76 <sup>c</sup>	.32 <sup>c</sup>	.51 <sup>c</sup>	.37 <sup>c</sup>	.44 <sup>c</sup>	---													
17 T2-DA	.05	-.18 <sup>b</sup>	-.01	-.06	.11	-.12 <sup>a</sup>	.14 <sup>a</sup>	-.09	.19 <sup>c</sup>	-.01	-.36 <sup>c</sup>	-.01	-.19 <sup>c</sup>	-.26 <sup>c</sup>	-.49 <sup>c</sup>	-.30 <sup>c</sup>	---												
18 T2-SC	.08	-.19 <sup>b</sup>	-.08	-.10	.13 <sup>a</sup>	-.07	.20 <sup>c</sup>	.00	.20 <sup>c</sup>	.07	-.33 <sup>c</sup>	-.10	-.19 <sup>b</sup>	-.25 <sup>c</sup>	-.41 <sup>c</sup>	-.29 <sup>c</sup>	.74 <sup>c</sup>	---											
19 T2-PA	.05	-.26 <sup>c</sup>	-.14 <sup>a</sup>	-.15 <sup>b</sup>	.15 <sup>b</sup>	-.18 <sup>b</sup>	.07	-.25 <sup>c</sup>	.24 <sup>c</sup>	-.18 <sup>b</sup>	-.47 <sup>c</sup>	-.09	-.27 <sup>c</sup>	-.43 <sup>c</sup>	-.51 <sup>c</sup>	-.34 <sup>c</sup>	.42 <sup>c</sup>	.30 <sup>c</sup>	---										
20 T2-IP	.04	-.14 <sup>b</sup>	-.11	-.04	.17 <sup>b</sup>	-.10	.15 <sup>b</sup>	-.04	.16 <sup>b</sup>	-.06	-.38 <sup>c</sup>	-.10	-.19 <sup>b</sup>	-.27 <sup>c</sup>	-.42 <sup>c</sup>	-.34 <sup>c</sup>	.70 <sup>c</sup>	.58 <sup>c</sup>	.23 <sup>c</sup>	---									
21 T2-SU	.39 <sup>c</sup>	-.26 <sup>c</sup>	-.02	-.16 <sup>b</sup>	.09	-.01	.26 <sup>c</sup>	-.13 <sup>a</sup>	.02	-.12 <sup>a</sup>	-.24 <sup>c</sup>	-.07	-.32 <sup>c</sup>	-.15 <sup>c</sup>	-.14 <sup>a</sup>	-.17 <sup>b</sup>	.26 <sup>c</sup>	.27 <sup>c</sup>	.13 <sup>a</sup>	.19 <sup>b</sup>	---								
22 T2-Del	.01	-.05	-.08	-.10	.12 <sup>a</sup>	-.07	.14 <sup>a</sup>	-.19 <sup>b</sup>	-.09	-.13 <sup>a</sup>	-.22 <sup>c</sup>	-.20 <sup>c</sup>	-.27 <sup>c</sup>	-.06	-.04	-.18 <sup>b</sup>	.23 <sup>c</sup>	.16 <sup>b</sup>	.05	.22 <sup>c</sup>	.47 <sup>c</sup>	---							
23 T2-Lead	-.03	.16 <sup>b</sup>	.04	.16 <sup>b</sup>	-.02	.10	.07	.21 <sup>c</sup>	-.09	.17 <sup>b</sup>	.27 <sup>c</sup>	.04	.18 <sup>b</sup>	.33 <sup>c</sup>	.16 <sup>b</sup>	.25 <sup>c</sup>	-.15 <sup>b</sup>	-.10	-.19 <sup>b</sup>	-.10	-.01	.06	---						
24 T2-Serv	-.09	.22 <sup>c</sup>	.10	.22 <sup>c</sup>	-.11 <sup>a</sup>	.15 <sup>b</sup>	-.03	.25 <sup>c</sup>	-.04	.13 <sup>a</sup>	.38 <sup>c</sup>	.11	.34 <sup>c</sup>	.33 <sup>c</sup>	.19 <sup>b</sup>	.37 <sup>c</sup>	-.04	.00	-.19 <sup>c</sup>	-.04	-.07	-.03	.44 <sup>c</sup>	---					
25 T2-Help	-.08	.16 <sup>b</sup>	.14 <sup>a</sup>	.30 <sup>c</sup>	-.10	.27 <sup>c</sup>	-.14 <sup>a</sup>	.21 <sup>c</sup>	.03	.19 <sup>b</sup>	.44 <sup>c</sup>	.37 <sup>c</sup>	.39 <sup>c</sup>	.15 <sup>b</sup>	.17 <sup>b</sup>	.44 <sup>c</sup>	-.08	-.05	-.20 <sup>c</sup>	-.14 <sup>a</sup>	.00	-.06	.24 <sup>c</sup>	.29 <sup>c</sup>	---				
26 T2-Ideo	.04	.24 <sup>c</sup>	.14 <sup>a</sup>	.30 <sup>c</sup>	-.15 <sup>b</sup>	.29 <sup>c</sup>	-.14 <sup>a</sup>	.38 <sup>c</sup>	.11	.36 <sup>c</sup>	.57 <sup>c</sup>	.50 <sup>c</sup>	.65 <sup>c</sup>	.17 <sup>b</sup>	.18 <sup>b</sup>	.47 <sup>c</sup>	-.11	-.06	-.22 <sup>c</sup>	-.13 <sup>a</sup>	-.17 <sup>b</sup>	-.18 <sup>b</sup>	.30 <sup>c</sup>	.38 <sup>c</sup>	.48 <sup>c</sup>	---			

Table 7.1

*Summary of Time 1 predictor and Time 2 outcome correlations continued*

Var	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
27. T2-SDS	.14 <sup>a</sup>	.11	.07	.08	-.04	.07	-.10	.12 <sup>a</sup>	-.02	.09	.18 <sup>b</sup>	.19 <sup>b</sup>	.20 <sup>c</sup>	.05	.07	.09	.06	.01	-.01	.03	-.02	-.03	.07	.21 <sup>c</sup>	.09	.22 <sup>c</sup>	---		
28. T2-Auto	-.05	.11	.16 <sup>b</sup>	.19 <sup>b</sup>	-.22 <sup>c</sup>	.24 <sup>c</sup>	-.12 <sup>a</sup>	.13 <sup>a</sup>	-.07	.16 <sup>b</sup>	.44 <sup>c</sup>	.22 <sup>c</sup>	.30 <sup>c</sup>	.24 <sup>c</sup>	.24 <sup>c</sup>	.50 <sup>c</sup>	-.21 <sup>c</sup>	-.21 <sup>c</sup>	-.26 <sup>c</sup>	-.23 <sup>c</sup>	-.11	-.13 <sup>a</sup>	.16 <sup>b</sup>	.22 <sup>c</sup>	.29 <sup>c</sup>	.30 <sup>c</sup>	.05	---	
29. T2-Demand	.04	.13 <sup>a</sup>	.12 <sup>a</sup>	.01	-.16 <sup>b</sup>	.12 <sup>a</sup>	-.03	.12 <sup>a</sup>	-.08	.08	.30 <sup>c</sup>	.11	.22 <sup>c</sup>	.18 <sup>b</sup>	.24 <sup>c</sup>	.28 <sup>c</sup>	-.24 <sup>c</sup>	-.25 <sup>c</sup>	-.28 <sup>c</sup>	-.23 <sup>c</sup>	-.01	-.05	.09	.11 <sup>a</sup>	.14 <sup>b</sup>	.21 <sup>c</sup>	.08	.46 <sup>c</sup>	---
30. T2-Respon	-.13	.14 <sup>a</sup>	.16 <sup>b</sup>	.22 <sup>c</sup>	-.04	.05	-.08	.10	.07	.06	.27 <sup>c</sup>	.23 <sup>c</sup>	.31 <sup>c</sup>	.09	.11 <sup>a</sup>	.17 <sup>b</sup>	-.10	-.18 <sup>b</sup>	-.06	-.09	-.23 <sup>c</sup>	-.22 <sup>c</sup>	-.02	.11	.17 <sup>b</sup>	.23 <sup>c</sup>	-.01	.18 <sup>b</sup>	-.04

*Note.* Var = variables; SOC11 = Total SOC 11-item scale score; RPI = Resistance to Peer Influence; Pos = Positive Prototype; Neg = Negative Prototype; EF = External Functional Emotion Regulation; ED = External Dysfunctional Emotion Regulation; IF = Internal Functional Emotion Regulation; ID = Internal Dysfunctional Emotion Regulation; FOI = Future Orientation Inventory; PYD = Positive Youth Development; Char = Character; Comp = Competence; Confid = Confidence; Conn = Connection; DA = Depressed affect; SC = somatic complaints; PA = Positive Affect; IP = Interpersonal problems; Sub = Substance use; Delin = Delinquency; Lead = Leadership; Serv = Service; Help = Helping; and Ideol = Ideology; SDS = Social desirability scale; Auto = Parenting style autonomy-granting subscale; Demand = Parenting style demandingness subscale; Respon = Parenting style responsiveness subscale; T1 = time 1; T2 = 12-months follow-up.

Statistical significance: <sup>a</sup> =  $p < .05$ ; <sup>b</sup> =  $p < .01$ ; <sup>c</sup> =  $p < .001$ .

***Relationship between PYD and Social Desirability.*** Pearson Product Moment Correlation Coefficients were conducted for all the variables included in the current study (see Table 7.1). Looking at the relationship between PYD and social desirability response bias, a number of significant correlations were observed. Specifically, significant positive correlations were observed between social desirability and PYD total scores ( $r = .18, p < .01$ ), and subscales of caring ( $r = .19, p < .01$ ), and character ( $r = .20, p < .001$ ). However, these correlations are regarded as weak (i.e.,  $< .30$ ; Dancey & Reidy, 2007). The relationships between social desirability and subscales of competence, confidence, and connection were non-significant ( $ps > .05$ ). Therefore, PYD scores are not unduly influenced by social desirability response bias.

***Predictive validity of time 1 PYD scores on time 2 outcomes.*** In order to evaluate the theoretical model of PYD and its relationship with positive and negative outcomes, a structural model was constructed using time 1 PYD and time 2 outcomes of contribution, risky-behaviours and depression (see Figure 7.1).

For this model, the latent constructs of depression, contribution and risky behaviours were used. This was to improve the estimation characteristics of the structural model and the reliability of the outcome measures (compared to using overall mean scores).

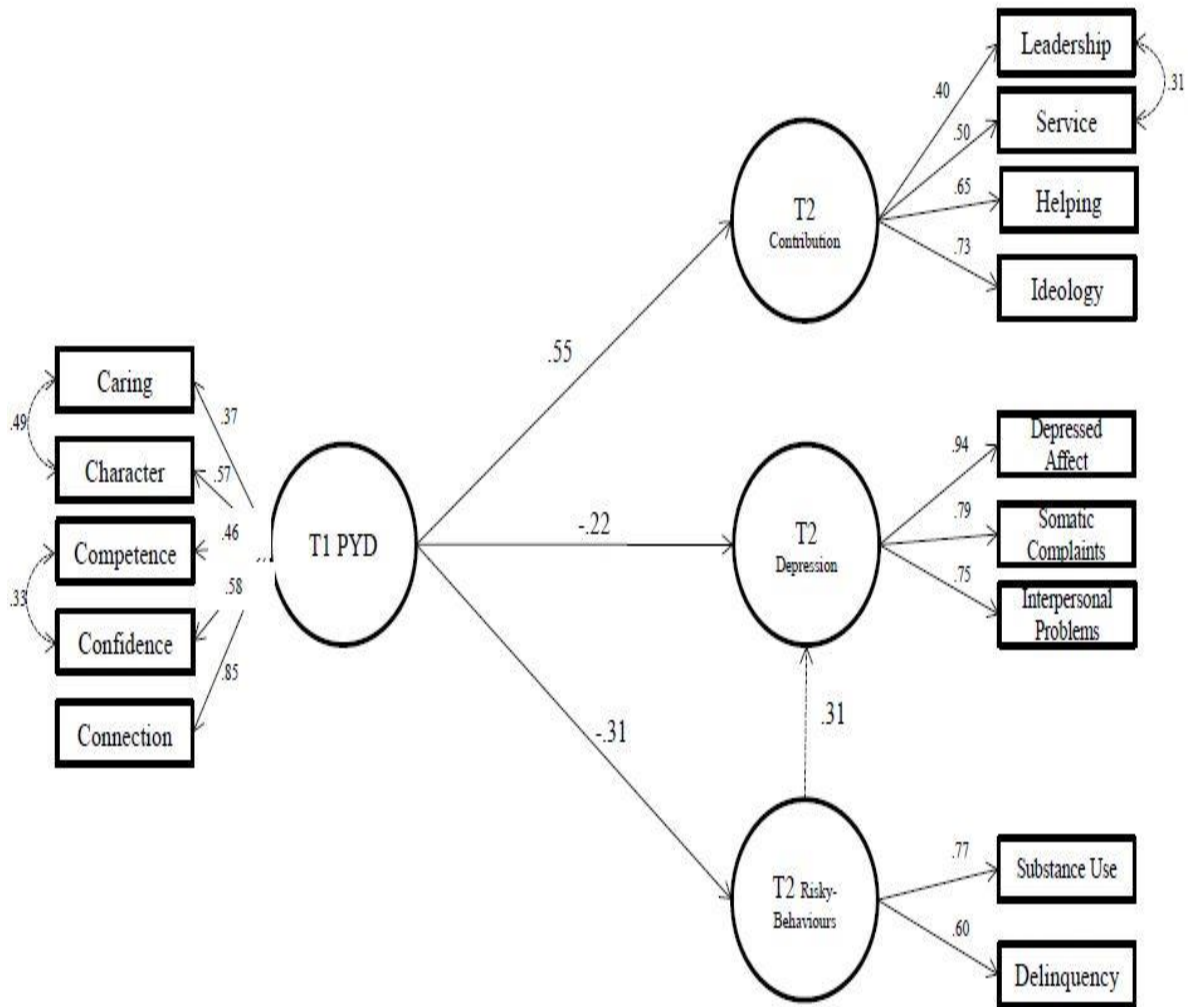


Figure 7.1

*Structural Model of the relationship between Time 1 PYD and Time 2 positive and negative outcomes with standardised ML estimates (all significant  $p < .05$ ).*

*Note.* Residual terms are omitted for clarity; controlled for age and gender (not shown)

The initial model tested (M1) assumed that the Five Cs are conceptually and empirically separate constructs, and simultaneously tested whether or not the three outcomes (contribution, depression, and risky behaviours) are unrelated to each other and predicted by PYD. This model is depicted in Figure 7.1 with solid lines illustrating the hypothesised relationships. The results of the initial model did not provide acceptable levels of goodness-of-fit (see Table 7.2).

In order to improve model fit a number of changes were made based on suggested modification indices and previous research. First, the residual terms of Competence and Confidence, and of Character and Caring, were allowed to covary. This is in line with findings from the 4-H study of PYD (Lerner et al., 2005; Jellicic et al., 2007). In addition, a pathway was added from risky behaviours to depression (Jellicic et al., 2007). This was based on the premise that depression increases with increasing involvement in risk behaviour (Hallfors et al., 2004). Finally, modification indices suggested that allowing the contribution indicators of leadership and service to covary would contribute to model improvement. As these indicators are thematically related (i.e., represent active prosocial behaviour), a covariance was added. This model is depicted in Figure 7.1, with dashed lines illustrating the additions. This model was subsequently run (see Table 7.2, Model 2).

The  $\chi^2$  difference test between Model 1 and Model 2 indicated a significant improvement in model fit. In addition, model fit indices indicated an adequate model fit (i.e.,  $Q < 5$ , RMSEA and SRMR  $\leq .10$ , CFI  $\geq .90$ ; Byrne, 2010; Tabachnick & Fidell, 2007). The structural regression coefficients for predicting Time 2 contribution, depression, and risky behaviours were all statistically significant ( $p < .01$ ) and the standardised effects estimates were all greater than 0.30. See Figure 7.1 for standardised regression coefficients.

The structural pathways from time 1 PYD scores to time 2 outcomes of contribution, depression and risky-behaviours were significant in the anticipated directions. Specifically, time 1 PYD scores were positively predictive of time 2 contribution, with higher PYD scores at time 1 predicting higher contribution scores 12-months later. In addition, time 1 PYD scores were negatively predictive of time 2 depression and risky-behaviours, with higher PYD scores at time 1 predicting lower depression and risky-behaviour scores 12-months later. The structural path between



PYD scores at time 1 and contribution at time 2 appeared to be the strongest ( $\beta = .55$ ), accounting for 29.8% of the variance in contribution 12-months later. The model also accounted for 18.6% of the variance in depression, and 9.5% of the variance in risky-behaviours (see Table 7.3).

Table 7.2

*Fit indices for structural equation models for Time 1 PYD predicting Time 2 contribution, depression, and risky behaviours (N = 327)*

Model	Significance tests		Fit measures						Change	
	$\chi^2$ (df)	<i>Q</i>	RMSEA	90%CI RMSEA	CFI	TLI	SRMR	AIC	$\Delta\chi^2$ (df)	$\Delta$ CFI
M1	417.06 (87)	4.79	.108	.098, .118	.79	.74	.09	483.06	-	
M2	208.57 (70)	2.98	.078	.066, .090	.91	.88	.06	278.57	208.49 (17)***	
<i>Gender Invariance</i>										
M3 (Males)	148.75 (70)	2.13	.080	.062, .098	.91	.88	.08	246.75	-	-
M4 (females)	109.26 (70)	1.56	.061	.037, .082	.94	.92	.06	207.26	-	-
M5 (Configural)	258.01 (140)	1.84	.051	.041, .061	.92	.90	.08	454.01	-	-
M6 (Constrain All FL)	284.43 (150)	1.90	.053	.043, .062	.91	.89	.08	460.43	26.42 (10)**	.011

Table 7.2

*Fit indices for structural equation models for Time 1 PYD predicting Time 2 contribution, depression, and risky behaviours continued*

Model	Significance tests		Fit measures						Change	
	$\chi^2$ (df)	<i>Q</i>	RMSEA	90%CI RMSEA	CFI	TLI	SRMR	AIC	$\Delta\chi^2$ (df)	$\Delta$ CFI
M7 (FL – caring)	280.02 (149)	1.88	.052	.043, .061	.91	.89	.08	458.02	22.01 (9)**	.009
M8 (Paths Constrained)	281.66 (153)	1.84	.051	.041, .060	.91	.90	.08	451.66	1.64	.003
<b><i>Age Invariance</i></b>										
M9 (Younger)	159.59 (70)	2.28	.078	.062, .094	.91	.88	.08	229.59	-	-
M10 (Older)	144.33 (70)	2.06	.097	.074, .119	.86	.81	.09	214.33	-	-
M11 (Configural)	304.07 (140)	2.17	.060	.051, .069	.89	.86	.07	444.07		
M12 (Constrain All FL)	318.27 (150)	2.12	.059	.050, .068	.89	.86	.07	438.27	14.20 (10)	.003
M13 (Paths Constrained)	327.59 (154)	2.13	.059	.050, .068	.88	.86	.08	439.59	9.32 (4)	.004

Table 7.3

*Standardised and unstandardised regression weights (with standard errors) for the structural equation model of time 1 PYD scores on time 2 outcomes.*

Pathway	$\beta$	B	SE	<i>p</i>
<b>Structural Pathways</b>				
PYD ==> Contribution	.55***	0.23	.05	< .001
Depression	-.22**	-0.08	.03	.002
Risky-behaviours	-.31***	-0.11	.03	< .001
Risk ==> Depression	.31***	0.33	.09	< .001
<b><math>R^2</math></b>				

Contribution  $R^2 = .298$

Depression  $R^2 = .186$

Risky-Behaviours  $R^2 = .095$

*Note.* PYD = Positive Youth Development; SE = standard error.

Statistical significance: \*\*\* $p < .001$ ; \*\* $p < .01$ .

*Gender invariance.* The theoretical model depicting the relationship between time 1 PYD scores, and time 2 outcomes, was assessed to examine whether the relationships were equivalent across gender. This was conducted by testing the measurement invariance (i.e., test to see if each item is perceived and interpreted the same across groups) and structural invariance (i.e., degree to which the relationships between latent variables are similar in each group) of the causal model. Invariance is supported when constrained models do not provide poorer fit as indicated by fit indices (i.e.,  $\Delta CFI = .01$ ) and the chi-square difference test. If a significant difference between groups was identified, modification indices and the factor-ratio method (Cheung & Rensvold, 1999) were utilised to identify group differences.

First, the model was fitted to both male and female groups separately to establish baseline model fit of the hypothesised model (M3 = males; M4 = females). Both models fit the data adequately (see Table 7.2). Second, configural invariance was assessed (i.e., allowing all model parameters to be freely estimated), as this is required for further testing (Byrne, 2001). The configural model (see Table 7.2; M5) fits the data according to model fit criteria (i.e.,  $Q < 5$ ,  $RMSEA \leq .08$ , CFI and  $TLI \geq .90$ ). Thus, it was appropriate to conduct further invariance tests.

The next test of invariance constrained the factor loadings in the causal model (M6). Comparing this model to the configural model, a significant difference was found according to the chi-square test and CFI criterion (Byrne, 2010). This reveals an invariant factor loading across groups. Following suggestions from modification indices, the factor-loading of caring on PYD was released, resulting in a significant improvement in model fit ( $\chi^2_{(1)} \text{ diff} = 4.41, p < .05$ ). Compared to the configural model, this model (M7) had a change in CFI of less than .01, therefore was invariant. Thus, partial factorial invariance is supported (Cheung & Rensvold, 1999), suggesting the hypothesised model (except caring) fit the data adequately for both male and female adolescents. The next test of invariance assessed the invariance of structural pathways. No significant difference was observed (i.e.,  $\Delta CFI < .01$ ) when the structural pathways were constrained (see Table 7.2, Model M8). Therefore, the structural pathways performed equally for males and females.

*Age invariance.* The same procedure was performed for younger and older age groups (see Table 7.2). First, the model was fitted to both younger and older adolescent age groups separately to establish baseline model fit of the hypothesised model (M9 = younger; M10 = older adolescents). The younger adolescent model fit the data adequately, while the older adolescent model showed a poor fit (see Table 7.2). No substantive changes were suggested by the modification indices, therefore, the models were compared for configural invariance to ascertain overall fit of the two models simultaneously (i.e., all model parameters were allowed to be freely estimated). The configural model (see Table 7.2; M11) showed an adequate fit according to model fit criteria (i.e.,  $Q < 5$ ,  $RMSEA \leq .08$ ). Thus, it was appropriate to conduct further invariance tests. Constraining the factor loadings in the causal model (M12) revealed invariant factor loading across groups, suggesting the hypothesised model fit the data adequately for both younger and older adolescents.

Structural invariance was also supported when the structural pathways were constrained (see Table 7.2, Model M13). Therefore, the structural pathways performed equally for younger and older adolescents.

**7.4.2 Testing the model of Adolescent Self-regulation predictors at time 1 and contribution, depression, and risky-behaviours at time 2.** The second aim of this study was to assess the predictive ability of the adolescent self-regulation model on positive and negative indices of development 12-months later. Using outcome data from time 2 allows the investigation of the long-term influence of prosocial values, resistance to peer influence, emotion regulation, future orientation and SOC scores on positive and negative indices of development. Thus, the model specified in study 2B is re-assessed using time 2 outcomes (i.e., PYD, contribution, risky-behaviours and depression).

***Time 2 descriptive statistics.*** Reliability coefficients (and confidence intervals), means, standard deviations, scale score ranges, and tests of normality (skewness and kurtosis) for the self-report measures used in Study 2C are presented in Table 7.4. Correlations among these variables were presented in Table 7.1.

Table 7.4

*Descriptive Statistics for time 1 and time 2 measures in Study 2C (N = 327)*

Variable	M	SD	A	95% CI	Possible Range	Attained Range	Skew	Kurtosis
<b>Predictors</b>								
T2 – Age	16.52	1.49	-	-	-	13.44-19.52	-	-
T1 – SOC	6.24	2.08	.75 <sup>17</sup>	-	0-11	1.00-11.00	-0.13	-0.41
T1 – Positive	4.31	0.70	.81	.78-.84	0-7	0.86-6.00	-0.48	1.68
T1 – Negative	2.75	0.92	.81	.78-.84	0-7	1.00-6.70	0.28	0.25
T1 – RPI	2.68	0.47	.72	.68-.77	1-4	1.30-3.80	-0.20	-0.17
T1 - Ext-Fun	2.92	0.88	.78	.74-.82	1-5	1.00-5.00	0.16	-0.58
T1 - Ext-Dys	1.63	0.49	.76	.72-.80	1-5	1.00-4.40	1.55	4.46
T1 - Int-Fun	2.96	0.70	.80	.77-.83	1-5	1.00-5.00	-0.16	0.16
T1 - Int-Dys	1.84	0.66	.60	.51-.67	1-5	1.00-4.33	0.95	1.01
T1 – FOI	2.29	0.47	.66	.60-.71	1-4	1.14-3.86	0.12	0.10
<b>Outcomes T2</b>								
T2 – PYD	7.80	1.29	.71	.66-.76	0-12	4.10-11.81	0.28	0.05
T2 – Caring	8.66	2.08	.78	.74-.81	0-12	2.67-12.00	-0.55	-0.27
T2 - Character	7.92	1.80	.80	.78-.83	0-12	2.58-12.00	-0.23	-0.14

<sup>17</sup> Composite Reliability ( $\omega$ ) is computed for the SOC model due to dichotomous scale items.



Table 7.4

*Descriptive Statistics for time 1 and time 2 measures in Study 2C continued.*

T2 – Comp	5.78	1.40	.67	.62-.71	0-12	1.58-9.60	-0.20	-0.07
T2 – Confid	7.45	2.01	.69 <sup>a</sup>	-	0-12	0-12	-0.17	0.52
T2 – Connect	8.04	1.85	.77	.74-.80	0-12	1.25-12	-0.35	0.46
T2 - Depression	16.12	10.08	.91	.89-.92	0-60	0-48	0.87	0.32
T2 – Dep-DA	0.60	0.64	.89	.87-.91	0-3	0-3	1.34	1.47
T2 – Dep SC	0.92	0.54	.76	.72-.80	0-3	0-3	0.86	1.18
T2 – Dep-PA	1.02	0.64	.76	.71-.80	0-3	0-3	0.42	-0.15
T2 – Dep-IP	0.69	0.74	.55 <sup>a</sup>	-	0-3	0-3	1.05	0.61
T2 - Contrib	53.24	15.61	.76	.73-.79	0-100	8.33-97.92	0.12	0.15
T2 – Risk	1.44	0.47	.77	.75-.80	1-5	1.00-4.38	2.14	7.10
T2 – Demand	2.52	0.62	.64	.57-.70	0-4	0.60-4.00	-0.08	0.13
T2 – Response	2.84	0.73	.74	.70-.79	0-4	0.20-4.00	-0.77	0.72
T2 – Autonomy	2.50	0.67	.64	.58-.70	0-4	0.20-4.00	-0.38	0.49
T2 – SDS	1.87	0.85	.25	.11-.38	0-4	0-4	0.02	-0.59

*Note.* SOC = Selection, Optimisation and Compensation (SOC); Positive = Positive prototype factor; Negative = Negative prototype factor; RPI = Resistance to Peer Influence; Ext-Dys = External Dysfunctional Emotion Regulation; Ext-Fun = External Functional Emotion Regulation; Int-Dys = Internal Dysfunctional Emotion Regulation; Int-Fun = Internal Functional Emotion Regulation; FOI = Future Orientation Inventory; PYD = Positive Youth Development; T1 = time 1; T2 = 12-months follow-up.

**Structural equation modelling.** The SEM model depicting the relationships between time one predictors and time 2 outcomes, controlling for age and gender, showed an adequate fit,  $\chi^2_{(311)} = 662.55$ ,  $p < .001$ ,  $Q = 2.13$ , CFI = .88, TLI = .84, RMSEA = .059 (90% CI = .053 - .065), SRMR = .06, AIC = 19377.36. All indicators loaded significantly onto their respective latent variables ( $ps < .01$ ). The standardised and unstandardised regression weights, with standard errors, are reported for each structural pathway in Table 7.5, while Figure 7.2 depicts the significant relationships between time 1 predictors and time 2 outcomes.

**Predictors of PYD.** Looking at the predictors of PYD at time 2, the direct pathway of resistance to peer influence, prosocial values, internal-functional emotion regulation (ER), external-functional ER, and external-dysfunctional ER, on the PYD latent construct were found to be statistically significant (see Table 7.5). In particular, prosocial prototypes ( $\beta = .54$ ) was the strongest predictor, followed by resistance to peer influence ( $\beta = .30$ ) and internal-functional emotion regulation ( $\beta = .30$ ). Overall, higher scores of resistance to peer influence, prosocial values, and internal- and external-functional ER at time 1, predicted higher PYD scores 12-months later. In addition, lower external-dysfunctional ER predicted PYD scores 12-months later. In total, the model explained 66.4% of the variance in PYD scores 12-months later.

**Predictors of contribution.** Looking at the predictors of contribution at time 2, the direct pathway of future orientation ( $\beta = .28$ ), internal-functional ER ( $\beta = .27$ ), and prosocial values ( $\beta = .36$ ) were statistically significant ( $ps < .05$ ). Higher future orientation, internal-functional ER, and prosocial values at time 1 predicted higher contribution scores 12-months later. In total, the model explained 36.9% of the variance in time 2 contribution scores.

**Predictors of depression.** Looking at the predictors of depression at time 2, the direct pathway of external-dysfunctional ER ( $\beta = .14$ ) on the depression latent construct was the only pathway found to be statistically significant. Higher levels of external-dysfunctional emotion regulation at time 1, was a significant predictor of higher depression scores 12-months later. All other predictors were non-significant ( $ps > .05$ , see Table 7.5). In total, the model explained 9.0% of the variance in depression scores 12-months later.

*Predictors of risky-behaviours.* Looking at the predictors of risky-behaviours at time 2, the direct pathways of SOC ( $\beta = -.25$ ) and external-dysfunctional emotion regulation ( $\beta = .16$ ) on the risky-behaviours latent construct were found to be statistically significant. Higher scores of external-dysfunctional emotion regulation, and lower SOC behaviours at time 1, were significant predictors of higher risky-behaviour scores 12-months later. All other predictors were non-significant ( $ps > .05$ , see Table 7.5). In total, the model explained 26.6% of the variance in risky-behaviour scores 12-months later.

*Summary.* Overall, the SEM illustrated an adequate fit for the model depicting the relationship between the adolescent self-regulation model predictors at time 1, and positive and negative outcomes 12-months later. Looking at positive outcomes, prosocial values and internal-functional ER at time 1 were significant predictor of PYD and contribution, such that higher prosocial values and adaptive emotion regulation (ER) predicted positive development 12-months later. In addition, resistance to peer influence, external-functional and external-dysfunctional ER also predicted PYD 12-months later, such that greater autonomy from peers, more external-functional ER, and lower external-dysfunctional ER, predicted PYD 12-months later.

In terms of negative outcomes, external-dysfunctional emotion regulation predicted both risky-behaviours and depression scores 12-months later, such that higher levels of external-dysfunctional emotion regulation at time 1 significantly predicted higher risky-behaviours and depression scores 12-months later. In addition, SOC scores at time 1 was also predictive of risky-behaviours 12-months later, such that lower SOC scores predicted higher levels of risky-behaviour 12-months later. A summary of all significant and non-significant pathways across the overall sample model, longitudinal sample, and gender, and age-specific models, is outlined in Appendix P.

In sum, illustrating the multiple pathways to healthy adolescent development, prosocial values, internal-functional ER, external-dysfunctional ER, external-functional ER, resistance to peer influence, and goal-directed behaviours (i.e., SOC scores), predicted positive and negative indices of development 12-months later. These findings are discussed in further detail in the discussion (see Section 7.5).

Table 7.5

*Standardised and unstandardised regression weights (with standard errors) for the structural equation model of time 1 predictors and positive youth development, contribution, risky-behaviours and depression scores at time 2.*

Pathway		$\beta$	B	SE	<i>p</i>
<b>Direct Effects on PYD</b>					
PYD <==	SOC	.08	0.77	1.31	.554
	RPI	.30***	0.75	0.22	< .001
	FOI	.24	0.45	0.24	.061
	Prototype	.54**	1.13	0.43	.009
	IF	.30**	0.55	0.18	.003
	EF	.26**	0.33	0.12	.006
	ED	-.20*	-0.46	0.19	.017
<b>Direct Effects on SOC</b>					
SOC <==	RPI	.13	0.03	0.02	.114
	FOI	.30*	0.06	0.03	.026
	Prototype	.30*	0.07	0.03	.040
	IF	.29**	0.06	0.02	.003
	EF	.01	0.01	0.01	.968
	ED	-.18	-0.04	0.02	.057

Pathway		$\beta$	B	SE	<i>P</i>
<b>Direct Effects on Contribution</b>					
Contribution <== SOC		.07	0.28	0.51	.587
	RPI	.10	0.11	0.08	.166
	FOI	.28*	0.22	0.11	.048
	Prototype	.36*	0.31	0.13	.020
	IF	.27**	0.20	0.07	.007
	EF	.14	0.08	0.05	.120
	ED	-.04	-0.03	0.08	.683
<b>Direct Effects on Risky-behaviours</b>					
Risk	<== SOC	-.25*	-1.93	0.82	.018
	RPI	.01	0.02	.12	.879
	FOI	-.07	-0.11	0.12	.370
	Prototype	-.07	-0.12	0.16	.482
	IF	-.01	-0.02	0.11	.834
	EF	.10	0.11	0.08	.154
	ED	.16*	0.31	0.12	.012
<b>Direct Effects on Depression</b>					
Depression <== SOC		-.10	-0.62	0.69	.367
	RPI	.01	-0.01	0.12	.955
	FOI	.10	0.13	0.11	.246

Pathway	$\beta$	B	SE	$p$
Prototype	-.10	-0.14	0.18	.445
IF	-.05	-0.06	0.09	.548
EF	-.15	-0.13	0.07	.060
ED	.14*	0.23	0.11	.047

 **$R^2$** 

Positive Youth Development  $R^2 = .66$ , SE = .11,  $p < .001$ ;

Intentional Self-regulation  $R^2 = .37$ , SE = .10,  $p < .001$ ;

Contribution  $R^2 = .37$ , SE = .09,  $p < .001$ ;

Risky-behaviours  $R^2 = .27$ , SE = .07,  $p < .001$ ;

Depression  $R^2 = .09$ , SE = .04,  $p = .016$ .

---

*Note.* PYD = Positive Youth Development; SOC = Self-regulation; RPI = Resistance to Peer Influence; FOI = Future Orientation Inventory; Proto = Prosocial Prototype; IF = Internal-functional emotion regulation; EF = External-functional emotion regulation; ED = External-dysfunctional emotion regulation. SE = standard error. Statistical significance: \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .

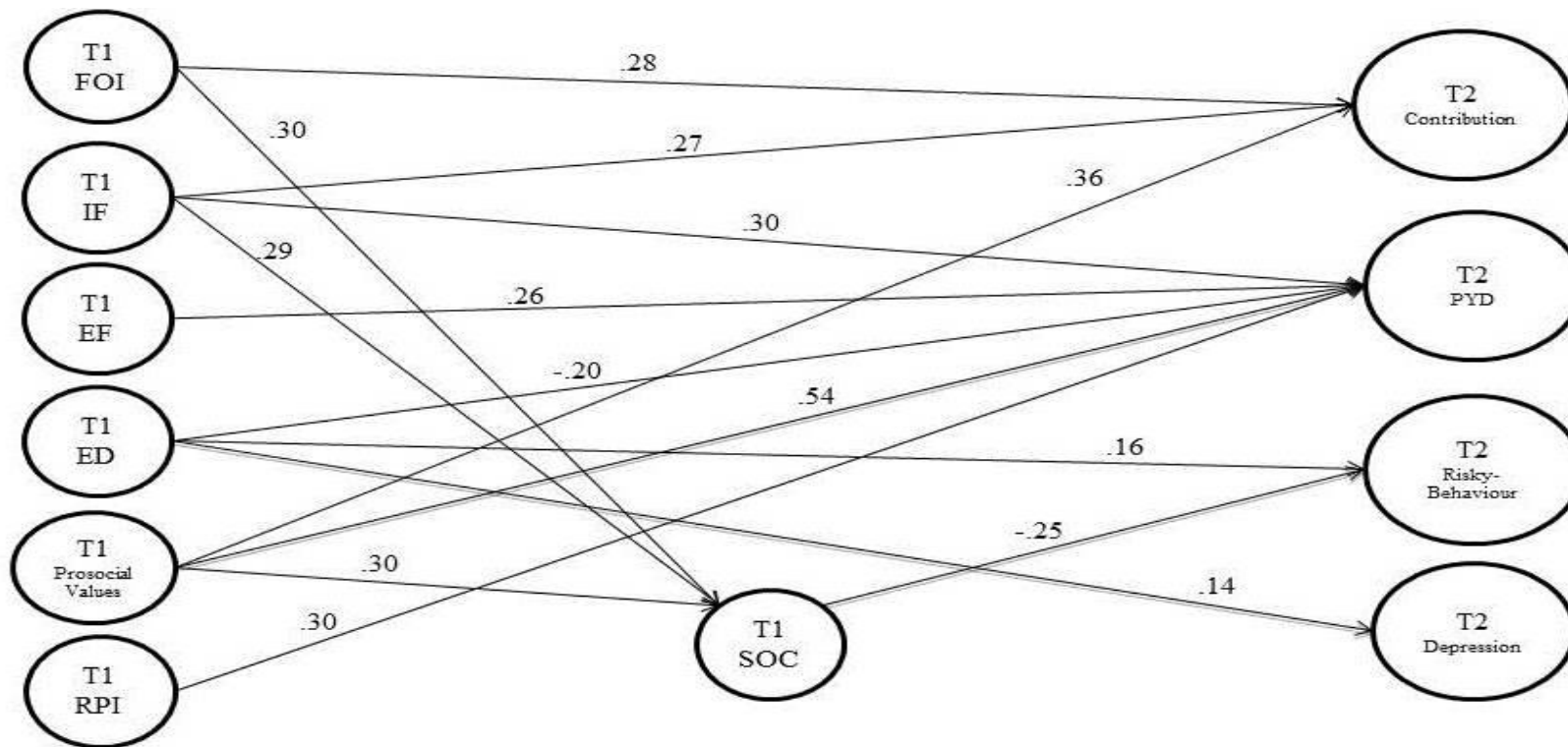


Figure 7.2

*Standardised regression weights for the structural equation model of time 1 predictors of future orientation (FOI), emotion regulation (Internal-Functional[IF]; External-functional [EF]; External-Dysfunctional [ED]), prosocial values, resistance to peer influence (RPI) and goal-directed behaviours (SOC) as an influencing factor on time 2 Contribution, PYD, Risky-Behaviours and Depression. Note. Significant pathways shown only ( $p < .05$ ). Paths controlled for age and gender (paths not shown).*

**7.4.3 Stability of PYD at time 2.** The third aim of the current study was to assess change in PYD over time using time 1 and time 2 data. This was conducted in three ways; a) assessing the stability of PYD factors over 12-months at group-level; b) assessing PYD scores over 12-months at an individual-level using person-orientated analyses (i.e., cluster analysis); and c) examining the individual characteristics associated with levels of change over 12-months.

*Stability of the PYD factors: Group-level.* The structural stability of the Five Cs model of PYD was previously established using time 2 data only. Hence the stability of scores are assessed in the subsequent analyses.

In order to assess the stability of the overall PYD scores and the PYD subscales over 12-months, rank-order stability correlation coefficients were used. The retest correlations between time 1 and time 2 scores of PYD, caring, character, competence, confidence, and connection and shown in Table 7.6. The retest correlations were all moderate to strong in size (Dancey & Reidy, 2007), and significant at  $p < .000$ : Positive youth development  $r = .63$ , caring  $r = .53$ , character  $r = .61$ , competence  $r = .67$ , confidence  $r = .46$ , and connection  $r = .60$ .

Notably, the correlation between the confidence subscale at time 1 and time 2 is the lowest, while character, competence, and connection were similar to the stability of overall PYD scores. These correlation coefficients provide evidence of moderate to large levels of stability in positive youth development over 12-months. Thus Irish adolescents as a group tend to keep the same rank order on PYD overall, and subscale scores.



Table 7.6

*Summary of Spearman Rank –Order Correlation Coefficients between the 5Cs and Total PYD scores at time 1 and time 2.*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. PYD – T1	---										
2. Caring – T1	.65***	---									
3. Character – T1	.70***	.55***	---								
4. Competence – T1	.60***	.15**	.18**	---							
5. Confidence – T1	.69***	.15**	.28***	.48***	---						
6. Connection – T1	.79***	.36***	.47***	.41***	.54***	---					
7. Caring – T2	.37***	<b>.53***</b>	.38***	.07	.06	.26***	---				
8. Character – T2	.50***	.36***	<b>.61***</b>	.20***	.26***	.38***	.52***	---			
9. Competence – T2	.38***	.07	.13*	<b>.67***</b>	.33***	.27***	.07	.28***	---		
10. Confidence – T2	.35***	.01	.18**	.33***	<b>.46***</b>	.34***	.07	.31***	.55***	---	
11. Connection – T2	.56***	.27***	.42***	.34***	.40***	<b>.60***</b>	.33***	.53***	.38***	.46***	---
12. PYD – T2	<b>.63***</b>	.35***	.48***	.44***	.44***	.52***	.57***	.75***	.63***	.67***	.77***

*Note.* PYD = Positive Youth Development; T1 = Time 1 data; T2 = Time 2 data. **Bold** font signifies test-retest scores.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

***Stability of the PYD factors: Individual-level.*** In addition to examining the stability of PYD over 12-months across adolescents as a group, the current study also endeavoured to use person-orientated analysis to allow the analysis of individual-level differences in stability of PYD. Thus, cluster analysis was conducted.

***Cluster Analysis.*** Cluster analysis is a person-orientated approach that allows the identification of empirically selected sub-groups of individuals that have similar score profiles on PYD at the two time points (Bergman & Magnusson, 1997). The advantages of using cluster analysis and a description of procedures undertaken are described in Chapter 4 (see Section 4.8.3).

***Patterns of change.*** The hierarchical cluster analysis (i.e., using Ward method, 1963) indicated that a four-cluster solution would provide the best grouping of cases. The four clusters which emerged were; 1) increasing ( $n = 87$ , 26.60%); 2) low stable ( $n = 82$ , 25.08%); 3) decreasing ( $n = 86$ , 26.30%); and 4) high stable ( $n = 72$ , 22.02%). Groups 1 and 3 are characterised by change, while clusters 2 and 4 reflect stability in PYD over 12-months. The final cluster groups are illustrated in Figure 7.3.

The quality of the cluster analysis was supported as each cluster group contained a substantial number of cases (i.e., > 10%) and was therefore interpretable, thus suggesting the validity of the four-cluster solution (Rapkin & Luke, 1993). All full-sample clusters had a closely matched “twin” cluster in the random two-thirds sample, with 84% of cases assigned to the same clusters, indicating that the solution was likely to be replicable at the population level (Bergman, 2003).

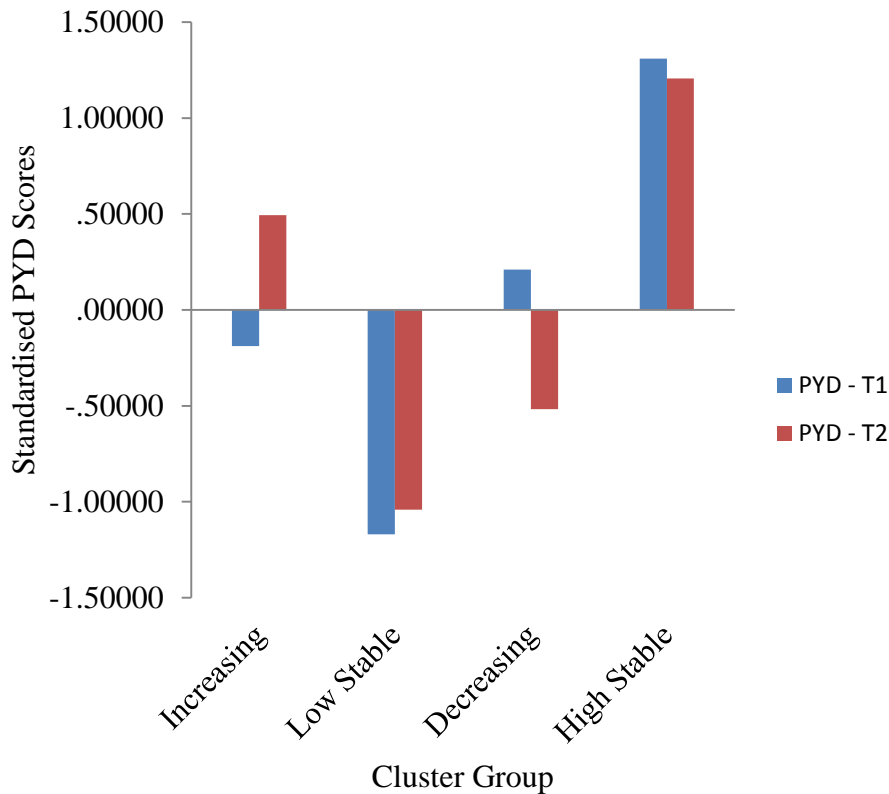


Figure 7.3

*A four-cluster solution for typical PYD development groups over 12-months*

Mean values of standardised time 1 and time 2 PYD scores for each of the four groups (increasing, low stable, decreasing, and high stable) are displayed in Figure 7.3. As expected, the MANOVA analysis, assessing time 1 and time 2 PYD scores across the four groups, yielded a significant multivariate effect for cluster membership, ( $F [6, 646] = 158.97, p < .001$ ; Pillai's Trace = 1.19;  $\eta^2_p = .60$ ), with each group found to be significantly different to all others using the Tukey HSE post hoc comparison test. Therefore, a four-cluster solution was supported.

**Characteristics of Cluster Groups.** Therefore, the cluster groups were evaluated to examine whether a number of factors could predict group membership. Age (younger and older adolescents), gender, SOC, resistance to peer influence, emotion regulation strategies and future orientation scores at time 1 were tested using one-way between groups ANOVA. In addition, parental style measured at time 2 was assessed. Furthermore, the external criterion validity of the cluster

groups was evaluated by testing for differences on positive (i.e., contribution) and negative behaviour scores from time 1 (i.e., depression and risky-behaviours).

*Demographics.* The age and gender composition of the clusters did not differ significantly (Age;  $\chi^2 [3] = 3.15, p = .369$ ; Gender;  $\chi^2 [3] = 2.82, p = .421$ ). This indicates that there was no significant difference in the number of boys and girls, or younger and older adolescents, in any of the four cluster groups (see Table 7.7).

Table 7.7

*Frequency and proportion of males and females according to cluster group*

Cluster	Males		Females		Younger		Older	
	f	% within males	f	% within females	f	% within younger	f	% within older
1. Increasing ( <i>n</i> = 87)	49	28.0	38	25.0	50	23.8	37	32.2
2. Low-Stable ( <i>n</i> = 82)	48	27.4	34	22.4	54	25.7	27	23.5
3. Decreasing ( <i>n</i> = 86)	40	22.9	46	30.3	56	26.7	30	26.1
4. High-Stable ( <i>n</i> = 72)	38	21.7	34	22.4	50	23.8	21	18.3

*Note.* f = frequency.

*Further characteristics.* Table 7.8 presents the results of examining cluster membership on factors of SOC, resistance to peer influence, emotion regulation strategies, future orientation, depression, risky-behaviours, and contribution scores at time 1, and parental style measured at time 2.

First, consistent differences were found between the cluster groups representing stability (i.e., group 2 “Low-stable”, and group 4 “High-stable”). Using pairwise t-tests to compare groups, Table 7.8 illustrates that the “High-Stable” group and the “Low-Stable” group were significantly different on all characteristics (except prosocial values,  $F [3, 323] = 0.76, p = .516$ ). Specifically, the “High-stable” cluster group displayed higher scores on time 1 SOC scores, resistance to peer influence, adaptive emotion regulation (i.e., internal- and external-functional), future orientation, contribution, and time 2 parental response, autonomy, and demanding subscales. Furthermore, the “High-stable” group also scored significantly lower on measures of maladaptive emotion regulation (i.e., internal- and external-dysfunctional), depression and risky-behaviours. Therefore, a number of adolescent self-regulatory factors were significantly associated with the developmental trajectory displayed over 12-months (i.e., low-stable, high-stable).

Second, consistent findings were also observed, where the cluster groups representing change (i.e., group 1 “Increasing” and group 3 “Decreasing”) failed to be differentiated on any of the characteristics included ( $ps = ns$ ). However, while significant differences did not emerge between these cluster groups, differences were observed in how these cluster groups were related to other cluster groups. For instance, the “Decreasing” cluster group has significantly lower SOC scores, resistance to peer influence, and parental style subscale scores when compared to the “High-stable” group, while the “Increasing” cluster group did not differ significantly from the “High-stable” group on these variables. Therefore, differences were found in the expression of characteristics in each group. A limitation of using two time-points in the current study is that change, whether increasing or decreasing, is difficult to differentiate. This is because change over two time points is represented by a straight line, therefore may not detect more nuanced aspects of change. Thus future research should further examine characteristics of change over more time points to clarify the trajectories of increasing versus decreasing PYD.

Overall, the optimal development group over 12-months (i.e., the high-stable cluster), was characterised by significantly higher goal-directed behaviour, resistance to peer influence, adaptive emotion regulation, future orientation, and contribution scores at time 1 compared to the low-stable PYD group. Furthermore, optimal development was also characterised by significantly lower scores of maladaptive emotion regulation, depression and risky-behaviours at time 1, and parental style at time 2 characterised by higher scores of parental responsiveness, higher autonomy-granting, and higher demandingness. Notably, the representation of age and gender groups in each cluster group was non-significant, indicating that an equal proportion of males and females, and younger and older adolescents, were represented in each cluster. Thus, in addition to identifying the different patterns of change in PYD over 12-months, the current study followed recommendations (Bowers et al., 2011) and examined the characteristics that could explain placement in particular developmental trajectories. A number of individual characteristics were found to be important in determining which developmental path young people followed. This was particularly clear for higher, and lower, stable PYD groups. These findings may be subsequently used to inform future research aimed at enhancing resilience and promoting positive development.

Table 7.8

*Cluster group means and standard deviations (in parenthesis) for key time 1 and time 2 characteristics, and pairwise comparisons between cluster groups.*

Variable	Cluster Group				ANOVA	Pairwise Comparisons (Significance)					
	1. Increasing <i>M (SD)</i>	2. Low Stable <i>M (SD)</i>	3. Decreasing <i>M (SD)</i>	4. High Stable <i>M (SD)</i>	F (df)	1 vs. 2	1 vs. 3	1 vs. 4	2 vs. 3	2 vs. 4	3 vs. 4
T1 SOC	6.53 (1.94)	5.12 (2.27)	6.20 (1.86)	7.19 (1.67)	14.38*** (3,178.22) <sup>a</sup>	***	.682	.144	.002	***	.009
T1 RPI	2.76 (0.40)	2.44 (0.47)	2.66 (0.47)	2.89 (0.42)	14.26*** (3, 323)	***	.439	.268	.009	***	.007
T1 Int-Dys	1.82 (0.64)	2.06 (0.70)	1.82 (0.62)	1.64 (0.60)	5.51** (3, 323)	.080	1.00	.296	.070	***	.328
T1 Int-Fun	2.91 (0.59)	2.62 (0.73)	2.96 (0.62)	3.39 (0.67)	18.13*** (3, 323)	.023	.952	***	.004	***	***
T1 Ext-Dys	1.64 (0.42)	1.81 (0.56)	1.60 (0.52)	1.41 (0.32)	11.67*** (3, 177.93) <sup>a</sup>	.082	.956	.013	.022	***	.052
T1 Ext-Fun	2.88 (0.80)	2.46 (0.77)	2.97 (0.84)	3.42 (0.87)	17.49*** (3, 323)	.005	.901	***	***	***	.004

Table 7.8

*Cluster group means and standard deviations (in parenthesis) for key time 1 and time 2 characteristics, and pairwise comparisons between cluster groups continued.*

Variable	Cluster Group				ANOVA	Pairwise Comparisons (Significance)					
	1. Increasing <i>M (SD)</i>	2. Low Stable <i>M (SD)</i>	3. Decreasing <i>M (SD)</i>	4. High Stable <i>M (SD)</i>	F (df)	1 vs. 2	1 vs. 3	1 vs. 4	2 vs. 3	2 vs. 4	3 vs. 4
T1 FOI	2.31 (0.40)	2.10 (0.41)	2.31 (0.53)	2.48 (0.48)	9.30*** (3,176.07) <sup>a</sup>	.024	1.00	.078	.024	***	.081
T1 Prosocial Values	3.51 (0.53)	3.48 (0.54)	3.56 (0.39)	3.60 (0.55)	0.76 (3, 323)	-	-	-	-	-	-
T1 Contribution	51.64 (10.27)	40.92 (13.86)	53.01(13.12)	63.39 (12.45)	41.76*** (3, 323)	***	.889	***	***	***	***
T1 Depression	12.65 (7.51)	20.93 (10.55)	13.54 (7.96)	9.41 (7.85)	20.27*** (3, 176.46) <sup>a</sup>	***	.902	.083	***	***	.014
T1 Risk	1.40 (0.35)	1.51 (0.55)	1.32 (0.48)	1.16 (0.25)	13.55*** (3, 175.83) <sup>a</sup>	.284	.627	.004	.017	***	.103
T2 Parental Response	2.98 (0.69)	2.45 (0.77)	2.69 (0.68)	3.28 (0.48)	22.63*** (3, 323)	***	.025	.027	.080	***	***



Table 7.8

*Cluster group means and standard deviations (in parenthesis) for key time 1 and time 2 characteristics, and pairwise comparisons between cluster groups continued.*

Variable	Cluster Group				ANOVA F (df)	Pairwise Comparisons (Significance)					
	1. Increasing <i>M (SD)</i>	2. Low Stable <i>M (SD)</i>	3. Decreasing <i>M (SD)</i>	4. High Stable <i>M (SD)</i>		1 vs. 2	1 vs. 3	1 vs. 4	2 vs. 3	2 vs. 4	3 vs. 4
T2 Parental Autonomy	2.62 (0.70)	2.30 (0.62)	2.36 (0.68)	2.74 (0.59)	8.19*** (3, 323)	.007	.042	.683	.924	***	.002
T2 Parental Demanding	2.62 (0.55)	2.33 (0.63)	2.38 (0.64)	2.79 (0.56)	10.24*** (3, 323)	.008	.038	.285	.949	***	***

*Note.* T1 = time 1 data; T2 = time 2 data; SOC = Selection, Optimisation and Compensation (SOC); RPI = Resistance to Peer Influence; Ext-Dys = External Dysfunctional Emotion Regulation; Ext-Fun = External Functional Emotion Regulation; Int-Dys = Internal Dysfunctional Emotion Regulation; Int-Fun = Internal Functional Emotion Regulation; FOI = Future Orientation Inventory; <sup>a</sup> = Welch's robust of equality of means. Statistical significance: \*  $p < .0125$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

## 7.5 Discussion

In order for the field of positive youth development to progress, a clear conceptualisation of positive functioning and the mechanisms underlining positive functioning, in theory and empirical research, is essential. This chapter had a number of aims. A primary goal was to further assess the psychometric properties of the Five Cs model of PYD. This was carried out using four approaches. First, the Five Cs model (derived from Study 2a) was retested using time 2 data only, in order to obtain further evidence of the structure of PYD in Irish adolescents. This model was found to have an adequate fit, therefore, the Five Cs model fit was established in Irish adolescents. Second, competing models were tested to examine modifications made to previous versions of the PYD measure, specifically, the addition of physical appearance as a subscale of confidence, and the removal of athletic competence as a subscale of competence. Results showed that the Five Cs model including athletic competence as an indicator of competence was a better fit for Irish adolescents. This is in contrast to previous research in the US where athletic competence was dropped as an indicator of PYD (Bowers et al., 2010; Geldhoff et al., 2013). This finding could be due to different levels of engagement in sports in Ireland and the United States. For instance, approximately 80% of 16-19 year old Irish adolescents engage in sports and exercise, compared to 59% of American 10-17 year olds. While these figures are not comparing the same age groups, older adolescence is widely viewed as a period of dropout from sports and exercise (Physical Activity Council, 2013). Therefore, the figure of 59% of 10-17 year olds is likely to be inflated compared to the percentage of older adolescents in isolation. Thus, the athletic competence subscale was retained in the Irish measure of PYD.

Third, the validity of the PYD measure was examined by evaluating the relationship between PYD scores and social desirability response bias. Although the measurement of positive constructs may be vulnerable to the social desirability response bias, no previous research had assessed this relationship. Weak correlations were found between social desirability and PYD total scores, and caring and character subscale scores, while no relationship was found between social desirability and competence, confidence, and connection. Therefore, given that weak relationships were observed and they are unlikely to constitute a meaningful relationship (Field, 2009), the PYD measure was not found to be influenced by

social desirability response bias. Thus, the validity of the PYD scores were supported.

Finally, the predictive ability of PYD scores on outcomes 12-months later was evaluated. Results showed that, in line with previous research, PYD scores at time 1 significantly predicted contribution, depression, and risky-behaviours 12-months later (Jelicic et al., 2007). Furthermore, the current study significantly added to the existing literature, by demonstrating that the predictive ability of PYD on positive and negative outcomes over time, was equivalent across gender and age groups. Thus, the predictive validity of the PYD measure was supported.

The second aim of this chapter was to examine the predictive ability of the adolescent self-regulation model at time 1, on positive and negative indices of development 12-months later. Consistent with time 1 results, findings illustrated that higher prosocial values and internal-functional emotion regulation were related to both higher PYD and contribution scores 12-months later, while higher external-functional emotion regulation and resistance to peer influence, and lower external-dysfunctional emotion regulation, also predicted higher PYD. In turn, higher external-dysfunctional emotion regulation predicted higher depression and risky-behaviours, while lower goal-directed behaviours also predicted higher risky-behaviour scores 12-months later. Notably in contrast to previous research, a non-significant relationship was found between SOC and positive outcomes of PYD and contribution over 12-months (e.g., Gestsdottir & Lerner, 2009). Thus, the role of other aspects of adolescent self-regulation, such prosocial prototypes, emotion regulation, and resistance to peer influence, are shown to play a significant role in predicting positive development over time.

The third aim of this chapter was to examine the stability of Irish adolescent's positive youth development construct over two time points using both group- and individual-level analysis. First, analysis of group-level stability revealed moderate to large levels of stability in PYD scores over 12-months. This indicates that Irish adolescents as a group tend to keep the same rank order on PYD scores over 12-months. This is similar to previous research on the 4-H study illustrating a high level of stability in overall PYD from Grade 7-12 (Geldhoff et al., 2013). Notably, in Irish adolescents, the correlation between the confidence subscale at time

1 and time 2 was the lowest, whereas in the 4-H sample, caring and character subscales illustrated the lowest correlations over time (Geldhoff et al., 2013). This suggests that, in Irish adolescents, the confidence subscale, consisting of items assessing self-worth and positive identity, could be more amenable to change than other subscales. Therefore, the confidence subscale may be more open to development through training and intervention. However, the low correlation may also be due to low test-retest reliability of the confidence subscale, or sample-specific fluctuations in confidence scores. Future research is needed to clarify the amenability of the PYD subscales to change.

Second, the current study used person-orientated analysis to assess the analysis of individual-level differences in stability of PYD. Using cluster analysis, four groups of change were revealed; increasing, low-stable, decreasing, and high-stable, with each group significantly different to all others. This is in line with previous research that found a number of trajectories of change in PYD over multiple time-points (Lewin-Bizan et al., 2010; Zimmerman et al., 2008). For example, using four waves of data, Zimmerman and colleagues (2008) found five trajectories of change; high, medium high, decreasing, increasing, and low. Previous research in an Irish context highlighted a decreasing trend across adolescence in indicators of positive development (e.g., self-esteem; Dooley & Fitzgerald, 2012). However, the current research illustrated a number of developmental trends, with Irish adolescents showing patterns of PYD scores that represent both stability and change.

Finally, the characteristics of each cluster group were examined. Clear differences were observed between the optimal group (i.e., high-stable) and the other groups in terms of higher goal-directed behaviours, resistance to peer influence, future orientation, adaptive emotion regulation and contribution, and lower depression and risky behaviours at time 1. In addition, scores on the parental response subscales were significantly different between cluster groups, with those in the optimal PYD cluster (i.e., high-stable group) reporting higher parental responsiveness, autonomy-granting, and demandingness compared to other groups. This adds to previous literature that reported higher SOC scores and positive parenting predicted membership in the optimal PYD development trajectory (Bowers et al., 2011; Zimmerman et al., 2008). Furthermore, autonomy from peers, future

orientation, and adaptive emotion regulation were highlighted as key factors predicting membership of optimal functioning over 12-months. Thus, members of the optimal PYD cluster group appear to be good self-regulators in a number of domains, from SOC behaviours (e.g., planning, making lists), to emotion regulation (e.g., reframing, taking perspective), while also reporting autonomy from peers and supportive parenting styles. It is unlikely that these factors act independently in predicting positive functioning during adolescence. For instance, adolescent striving for autonomy is regulated by parental responses that require a balance between setting limits and boundaries and providing sufficient freedom to explore new behaviours and learn from mistakes (Allen et al., 1997). Thus, while the current findings reveal characteristics that are important for positive adolescent development over time, future research should investigate the interactions between these factors.

Notably, the representation of age and gender groups in each cluster was non-significant, indicating that an equal proportion of males and females, and younger and older adolescents, were represented in each cluster. This is in contrast to Zimmerman and colleagues (2008) who reported that females were more likely to be present in the optimal trajectories of development over 4 years. This may be due to the difference in timeframes, with gender differences failing to emerge over 12-months, but may be more likely to emerge over longer periods of time (i.e., across 4 years). Thus, in terms of practical implications, gender differences in PYD may not emerge over a one-year programme, but may emerge over the course of longer programmes. However, this may depend on the nature and intensity of the programme.

Overall, these findings suggest that the positive youth development measure provides a robust measure of positive functioning in Irish adolescents. Furthermore, the current study supports the theoretical underpinning of the Five Cs model as a conceptualisation of positive functioning. Evidence also suggests the presence of both stability and change in adolescents' positive development over 12-months. From a theoretical perspective, changes in social and cognitive constructs occur due to the continuing biological, cognitive and social development throughout adolescence (Côté, 2009; Erikson, 1959; Schwartz, Luyckx, & Vignoles, 2011). For example, adolescents develop increasingly abstract self-representations, where domains of self-concept become more differentiated and hierarchically integrated

(Demetriou, 2000; Erikson, 1950; Harter, 1990). Notably, group-level results indicate a moderate to large level of stability in positive youth development and its dimensions over time. On the other hand, in line with theories of adolescent development (e.g., Erikson, 1950), cluster analyses suggest that within this average stability, there are a number of underlying groups. Indeed, two of the four groups identified in the current study are characterised by substantial change in PYD over 12-months. For instance, approximately 53% of the sample experienced some change in their positive development over 12-months. This suggests wider implications in terms of the malleability of PYD and the potential to develop interventions to increase PYD over time.

The characteristics of these clusters point to important possible avenues for such interventions. The group of individuals in the low-stable cluster were significantly lower than the optimal PYD group in goal-directed behaviours, resistance to peer influence, future orientation, adaptive emotion regulation and parental responsiveness, autonomy and demandingness. In addition, the low-stable cluster reported higher maladaptive emotion regulation strategies, depression and engagement in risky-behaviours, and lower contribution. Given that higher levels of these negative indices of development, such as depression, emerge in adolescence and may have significant negative long-term effects later in adulthood (Gotlib et al., 1998; Lewinsohn et al., 2003), further research is required to examine possible interventions likely to improve outcomes for young people. For example, the current study highlighted the importance of emotion regulation in influencing positive outcomes, and interventions with clinical samples provide evidence of the utility of interventions designed to improve emotion regulation in adolescents (Bogels et al., 2009; Schuppert et al., 2009), with increased internal locus of control, self-reported goals and subjective happiness being reported as outcomes.. Previous research has also highlighted the effectiveness of interventions to increase future orientation in a non-clinical sample of adolescents aged 15-16 years old (Marko & Savickas, 1998; effect size = .77). In addition, interventions aimed at increasing adolescent-family connectedness have also been highlighted as effective (Resnick et al., 1997). Thus, interventions combining these facets may improve PYD scores of those in the low-stable group. While these studies highlight the potential of including discrete

components of adolescent self-regulation into youth intervention programmes, more research is needed to ascertain their impact on positive developmental outcomes.

Recent research has highlighted the role of universal<sup>18</sup> social and emotional learning (SEL) programmes in promoting positive adolescent outcomes in schools (Durlak et al., 2011). In line with the PYD perspective, SEL programmes employ a framework that incorporates competence promotion and youth development, with the aim of reducing risk factors and fostering positive adjustment (Weissberg, Kumpfer & Seligman, 2003). Specifically, SEL programmes aim to foster competences in self-awareness, self-management, social awareness, relationship skills, and responsible decision making, through systematic instruction, modelling and practice (Collaborative for Academic, Social, and Emotional Learning, 2005). A meta-analysis of 213 controlled interventions reported a moderate improvement (effect size = .69) in social-emotional competences (Durlak et al., 2011). However, SEL programmes included a number of factors under the label of social-emotional competencies, such as emotion recognition, stress-management, empathy, problem-solving, and decision-making (Durlak et al., 2011). By combining the promotion of emotional, cognitive, and behavioural outcomes, the SEL programmes make it difficult to evaluate the relative contribution of specific intervention components on discrete aspects of adolescent self-regulation and positive development. In contrast, the current theoretically grounded study of adolescent self-regulation outlines specific competencies that are appropriate for determining positive adolescent outcomes. Thus, future research could use a theoretical model such as the Adolescent Self-Regulation model outlined above, to examine the specific aspects of adolescent interventions and the relative contribution of each component to positive development. However, interventions are likely to combine multiple components to enhance efficacy, thereby providing a challenge when seeking to isolate the contribution of specific components.

**7.5.1 Limitations.** A number of limitations and concerns should be addressed. First, the attrition rate between time 1 and time 2 was 34.15%. Thus, a

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<sup>18</sup> Universal implies delivered to all children, not just children identified as “at-risk”.

third of participants were lost during the 12-months. This is a common theme in longitudinal research (Alderman, Behrman, Kohler, Maluccio, & Watkins, 2001; Kristman, Manno, & Côté, 2005; Twisk & de Vente, 2002). In the current study, every effort was made to maximise participant retention by employing multiple methods of contact with the relevant stakeholders in the school (i.e., Principal and designated teacher[s]). This included text messages, emails, and phone conversations regarding the scheduling of data-collection. However, in some schools, participants were lost due to timetable clashes with subjects deemed more favourable or important (e.g., mathematics). Principals generally preferred to allow data-collection during or in parallel to classes deemed optional (e.g., religious studies, physical education). This may have had a negative impact on the retention rate in the current study. While positive regard for the study was voiced during debriefing, it is likely that the choice of completing a questionnaire for 40 minutes was perceived as less favourable than playing sports for 40 minutes. Previous research has outlined a number of methods that may increase the rate of retention of adolescents in longitudinal studies, for example, incentives for participants, postcard and telephone reminders, and telephone interviews (Boys et al., 2003). Thus, at a pragmatic level, future research may look to avoid timetabling that maximises participant retention.

Second, a design limitation of the current study that has been alluded to is that there were only two-points of data-collection. While cluster analysis is the most appropriate method for assessing change over two-time points (Hawkins et al., 2011), this method can only assess linear change. As such, two-waves of data do not capture non-linear changes that may occur. Thus, two time-points of data illustrates a mere snapshot of the developmental processes that are involved in the specified models. As with any research using follow-up data, it is important that change over time is not mistaken for the potential influence of regression to the mean (Nesselroade, 1992). Future research should use additional times of measurement, using designs such as cross-lagged panels designs (Kenny, 2005), to provide further understanding of the relationships between the adolescent self-regulation and positive and negative indices of development.

Finally, a further limitation of the current study is the discontinuity of use in the measures. Specifically, the measure for parental style was included at time 2



data-collection only. Although this was included in order to examine parental style as a predictor of PYD cluster groups, ecological assets such as parental style are likely to influence adolescent self-regulation (Bowers et al., 2011; Theokas & Lerner, 2006). The current research focused on individual factors of adolescent self-regulation, however, future research should include the individual and ecological variables such as parental style, social capital, and family resources that are likely to influence adolescent self-regulation and positive development (Theokas & Lerner, 2006).

**7.5.2 Conclusion.** Understanding the factors that promote healthy psychosocial functioning across adolescence is a fundamental goal of developmental science. This research, based on two waves of data, provides a positive youth development model that illustrates both structural stability, reliability and a valid assessment of positive development during adolescence. In addition, key factors of adolescent self-regulation are highlighted as important for predicting positive development over 12-months. Furthermore, self-regulation factors that are characteristic of optimal and sub-optimal development suggest possible avenues for future interventions. By developing a measure, developing a model of adolescent self-regulation, and exploring the underlying mechanisms of change in positive functioning, an empirical and theoretical foundation is built on which the processes of positive development may be explored.

## **8. Chapter 8**

### **General Discussion**

#### **8.1 Chapter Overview**

In this final chapter, a summary of the criticisms of previous research on measures of PYD and the role of intentional self-regulation in PYD will be presented, followed by a summary of the aims/objectives and findings of the current research. Furthermore, limitations of the current research, and practical and policy implications of the thesis are discussed.

#### **8.2 Overview of Thesis**

Positive youth development refers to a focus on the developmental characteristics that lead to positive outcomes and behaviours among young people. The Five Cs Model of PYD is the most empirically supported measure of PYD (Heck & Subramaniam, 2009). This is due to a national longitudinal study entitled the 4-H Study of Positive Youth Development, which encompasses information from adolescents over eight waves of data-collection, from 5<sup>th</sup> to 12<sup>th</sup> grade (approximately 10-18 years old; Lerner et al., 2008). However, a number of criticisms remain regarding the Five Cs model of PYD. These criticisms include: 1) concerns about the indicators used to operationalize the Five Cs PYD Model across adolescence; 2) concern about conceptual clarity of the Five Cs; 3) concern about the manifestation of PYD across age and gender; and 4) concerns about the generalizability of a measure of PYD outside of North America. Therefore, a key goal of this thesis was to examine PYD theory and assess the psychometric properties of the Five Cs measure of PYD in an Irish context, in order to gain a deeper understanding of PYD in Irish adolescents.

Furthermore, the role of self-regulation, specifically intentional goal-directed behaviour, operationalised through the SOC model (Freund & Baltes, 2002), has been delineated as the primary mechanism through which PYD occurs (Lerner et al., 2001; Gestsdottir & Lerner 2007; Gestsdottir & Lerner, 2008). Previous research has illustrated that SOC predicts outcomes of PYD, depression, delinquency, and risk behaviours both cross-sectionally and over repeated measurement intervals (Gestsdottir & Lerner, 2007; Gestsdottir et al., 2009; Gestsdottir et al., 2010).

However, a number of specific criticisms regarding the role of the SOC model in PYD have been identified. This includes: 1) The relationship between SOC and positive and negative outcomes are weak; 2) critiques of the SOC framework advocate for further research on goal selection, such as the role of motivational factors influencing goal selection; 3) previous research has shown other variables in addition to SOC, such as hopeful future expectations, are related to PYD; and 4) social and emotional factors included in the definitions of self-regulation are omitted from the SOC model. Therefore, the purpose of this thesis was to examine social, emotional, and attitudinal aspects of adolescent self-regulation that are hypothesised to be related to PYD. Specifically, using a dual-process model of decision-making, the current study tested the direct effects of prosocial values, resistance to peer influence, emotion regulation, and future orientation on positive development, and also the indirect effects on positive development via goal-directed behaviour (i.e., SOC). This model was called the Adolescent Self-Regulation Model and tested using structure equation modelling. By highlighting the factors of adolescent self-regulation that are important for PYD, this research can inform the development of future youth orientated programmes that aim to promote and sustain the healthy development of young people. The studies performed, and their respective objectives, are summarised in Table 8.1.

Table 8.1

*Summary of study research questions and objectives*

<b>Study</b>	<b>Research Question</b>	<b>Objective</b>
<b>Study 1</b>	- What role do prosocial values play in behavioural decision-making?	- To ascertain whether prosocial values are related to behavioural willingness.
<b>Study 1A</b>	- Are adolescent prosocial prototypes as salient as health-related prototypes in order to impact behaviour?	- To compare the salience of prosocial prototypes with health-related behaviours
<b>Study 1B</b>	- What are the characteristics of prosocial prototypes?	- To qualitatively assess the characteristics of prosocial prototypes
<b>Study 1C</b>	- What is the structure of prosocial prototypes and is it related to favourability, similarity, and behavioural willingness?	- To examine the structure of prosocial prototypes using exploratory factor analysis, and assess the predictive ability of prosocial prototypes on favourability, similarity, and behavioural willingness.

Study 2	Is the Five Cs Model of PYD a valid and reliable measure of positive functioning in Irish adolescents? Using a theoretically derived dual-process framework of Adolescent Self-Regulation, what are the predictors of positive and negative outcomes cross-sectionally and over 12-months? What characteristics are associated with changes in PYD over 12-months?	
Study 2A	<ul style="list-style-type: none"> <li>- Is the Five Cs model of PYD valid and reliable in an Irish sample?</li> <li>- Is the manifestation of the Five Cs model of PYD applicable across age and gender groups?</li> </ul>	<ul style="list-style-type: none"> <li>- Assess the structure, reliability, and validity of the Five Cs in a sample of adolescents using confirmatory factor analysis</li> <li>- Use multigroup analyses to compare the Five Cs model across age and gender groups</li> </ul>
Study 2B	<ul style="list-style-type: none"> <li>- Using a dual-process framework, do the hypothesised individual factors of prosocial images, emotion regulation, peer influence, future orientation, and SOC predict PYD, and outcomes of contribution, risky-behaviours and depression?</li> <li>- Are the hypothesised relationships similar across age and gender groups?</li> </ul>	<ul style="list-style-type: none"> <li>- Assess the theoretically derived relationships between prosocial images, emotion regulation, peer influence, future orientation, SOC, and outcomes of PYD, contribution, risky-behaviours and depression, using Structural Equation Modelling (SEM).</li> <li>- Use multigroup analyses to assess the model across age and gender</li> </ul>

Study	Research Question	Objective
Study 2C	<ul style="list-style-type: none"> <li>- Do the hypothesised factors predict PYD, contribution, risky-behaviours and depression 12-months later?</li> <li>- How do PYD scores change over 12-months?</li> <li>- What self-regulation characteristics are related to optimal PYD development over 12-months?</li> </ul>	<ul style="list-style-type: none"> <li>- Assess the relationships using SEM and outcome data at 12-months follow-up.</li> <li>- Assess the group and individual-level changes in PYD over 12-months.</li> <li>- Assess the self-regulation characteristics related to optimal PYD development over 12-months using one-way ANOVAs.</li> </ul>

**8.2.1 Overview of Study 1.** The purpose of Study 1 was to assess the role of prosocial values in guiding adolescent positive behaviour using the theoretical framework provided by the prototype/willingness model (Gibbons & Gerrard, 1995). The absence of knowledge about the role of adolescent prosocial values and its impact on positive behaviour suggested that an exploratory approach would be appropriate to inform the development of a scale (Greenslade & White, 2005). Therefore, a series of studies were undertaken to develop a measure of prosocial values (i.e., Study 1A, Study 1B, and Study 1C).

**Overview of Study 1A.** In order to assess whether prosocial values would impact subsequent behaviour, it was necessary to first examine whether Irish adolescents possessed clear and salient images of prosocial behaviour. Using self-report questionnaires, prosocial behaviours were found to be largely comparable to health-related behaviours using repeated one-way ANOVAs. In particular, images of “helping parents with chores” and “taking part in a youth group” were found to be particularly salient for Irish adolescents. Thus, these prosocial behaviours were used in subsequent studies to assess the characteristics of prosocial images.

**Overview of Study 1B.** Based on previous recommendations (Gerrits et al., 2009), Study 1B sought to qualitatively assess the characteristics of the prosocial behaviour images. A total of 12 characteristics were identified; 1) Smart, 2) Kind, 3) Sporty, 4) Friendly, 5) Respectful, 6) Attractive, 7) Popular, 8) Hardworking, 9) Caring, 10) Mature, 11) Independent, and 12) Boring. Thus, these characteristics were considered relevant by adolescents for describing their peers who engaged in prosocial behaviour.

**Overview of Study 1C.** The final part of Study 1 had two primary goals. First, the factor structure of prosocial prototypes was examined, and second, the role of prosocial prototypes in influencing motivational aspects of behaviour as outlined in the prototype/willingness model was evaluated (i.e., prototype favourability, prototype similarity, and behavioural willingness; Gibbons & Gerrard, 1995). First, a two-factor structure (i.e., positive prototype and negative prototype) was observed to represent the prosocial prototype scores. Second, in line with previous research (e.g., Rivis et al., 2006), the two prosocial prototype factors (positive and negative prototypes) were found to significantly predict prototype favourability and prototype

similarity, such that greater perceived positive characteristics (e.g., friendly) and fewer perceived negative characteristics (e.g., boring) associated with prosocial behaviour, were related to greater perceived favourability of, and similarity to, individuals engaging in prosocial behaviour. Furthermore, prototype similarity was subsequently found to be a significant unique predictor of behavioural willingness. Thus, the perceived similarity of a young person to a prosocial prototype is an important predictor of willingness to subsequently engage in prosocial behaviour. These findings indicate that prosocial prototypes may have significant implications for adolescent behaviour, as prosocial prototypes predict favourability of and similarity to a behaviour, and similarity to a prosocial prototype subsequently predicted willingness to engage in prosocial behaviour. Thus, in line with the prototype/willingness model, prosocial prototypes were suggested to influence willingness to engage in positive behaviour through a social, reactive route of decision-making (Gibbons & Gerrard, 1995). This measure of prosocial values was subsequently used in Study 2B to assess whether prosocial prototypes influenced PYD directly by motivating prosocial tendencies through a reactive decision-making route, or indirectly via SOC by providing motivational impetus to apply specific behavioural and cognitive skills (e.g., persistence, planning), toward achieving positive developmental outcomes (e.g., helping a neighbour).

**8.2.2 Overview of Study 2.** The purpose of Study 2 was to; 1) test the psychometric properties of the Five Cs Model of PYD in an Irish context; 2) test the Adolescent Self-Regulation model which specified hypothesised direct and indirect relationships between prosocial prototypes, resistance to peer influence, emotion regulation, future orientation, SOC, and outcomes of PYD, contribution, risky-behaviours and depression; and 3) assess how PYD changes over 12-months and what self-regulation characteristics are associated with positive change over 12-months. As these research goals spanned Study 2A, Study 2B, and Study 2C, we assess each individual research goal rather than focus on individual studies.

***Testing the psychometric properties of the Five Cs Model of PYD.*** Study 2A was aimed at investigating the dimensionality, reliability and the validity of the Five Cs Model of positive youth development. Following expert recommendations (Fabrigar et al., 1999), Confirmatory factor analyses (CFA) were conducted with self-reported data from 672 participants. In line with previous research (Lerner et



al., 2005; Phelps et al., 2009), the Five C's model illustrated an adequate fit to the data (i.e.,  $Q < 5$ ; RMSEA  $< .08$ ; CFI  $> .90$ ). This finding was further supported in Study 2C, when the Five Cs Model was tested using CFA on the longitudinal sample ( $N = 327$ ). Thus, the Five Cs Model was found to be a valid structure of the PYD measure in an Irish context.

Furthermore, looking at the indicators of the Five Cs model, Study 2C used the longitudinal sample to assess competing CFA models. In contrast to previous research (Bowers et al., 2010; Geldhoff et al., 2013), the current study showed that the subscale of athletic competence was a better fit for the PYD model compared to physical appearance. This finding could be due to two reasons. First, there are different levels of widespread adolescent engagement in sports in Ireland and the United States. For instance, approximately 80% of 16-19 year old Irish adolescents engage in sports and exercise, compared to 59% of American 10-17 year olds. Thus, athletic competence may be a more valid indicator of PYD for Irish adolescents as more Irish adolescents engage in sports and exercise. Second, the sample used by Bowers and colleagues (2010) in which they dropped the athletics competence indicator had a higher proportion of females (60.9% – 63.8% over three waves of data collection) compared to the current study (46.5% female). As females are less likely to engage in sports and exercise in adolescence (Physical Activity Council, 2013), this may also have influenced the low endorsement of athletic competence as an indicator of PYD. While there may be many commonalities in the forms of PYD across cultures (e.g., caring, character), the indicators may differ significantly depending on the cultural context. Thus, research examining the structure and validity of the PYD measure in different contexts and cultures is imperative. Overall, the Five Cs Model of PYD, including the indicator of athletic competence, was found to be an adequate fit for the measurement of positive functioning in Irish adolescents. Thus the Five Cs of caring, character, competence, confidence and connection were found to adequately conceptualise positive functioning in Irish adolescents.

In terms of reliability and validity, the Five Cs Model of PYD generally evinced good internal reliability, and good convergent, known-groups, discriminant, and predictive validity. However, a number of notable findings emerged. First, in terms of internal reliability, in contrast to previous research (e.g., Bowers et al.,

2010), the competence factor illustrated poor internal reliability for both time 1 ( $\alpha = .45$ ) and time 2 ( $\alpha = .46$ ) samples, although all indicators loaded significantly onto the latent factor. As previously outlined, low internal reliability is often found in scales with a low number of items (Nunnally, 1994), and a high value is not expected when measuring diverse aspects of an overarching construct such as athletic and academic competence (Sijtsma, 2009). Therefore, the competence factor was retained. Future research should further examine the competence factor to assess whether the addition of items assessing competence in domains other than academic, social, and athletic are relevant to adolescents. For example, perceptions of competence may be assessed within the family domain, such as perceived degree of responsibility at home (Keith, Nelson, Schlabach, & Thompson, 1990).

In terms of construct validity, the PYD subscales showed good convergent and known-groups validity. For instance, cross-sectional analysis showed that PYD subscales were generally related to measures of contribution and risky-behaviours as anticipated. Furthermore, the PYD subscales (with the exception of caring) were able to discriminate non-clinical and clinically significant depression scores. Discriminant validity was also found, as time 2 PYD and social desirability scores were found to have weak or non-significant correlations. Thus, PYD scores were found not to be unduly influenced by social desirability response bias. A notable finding at time 1 was that the observed relationships between confidence and measures of contribution and risky-behaviours were not in the expected direction, with higher scores on the confidence subscale associated with lower contribution and higher risky-behaviours. Previous discussions proposed a link between perceived overconfidence and narcissism (see Section 7.5; Landazabal, 2006; Morf & Rhodewalt, 2001). However, using the longitudinal sample, the anticipated relationships emerged, with higher confidence scores associated with higher contribution and lower risky-behaviours. Comparing the mean confidence scores at time 1 and time 2, time 1 confidence scores were higher ( $M = 7.61$ ,  $SD = 1.97$ ) compared to time 2 ( $M = 7.42$ ,  $SD = 2.01$ ). Although this did not constitute a significant difference, the higher confidence scores at time 1 may have facilitated this finding. Future research is needed to ascertain whether this was a sample specific finding, or whether higher levels of confidence, as measured by indicators of

self-worth and positive self-identity, may be associated with personality traits such as narcissism.

Finally in terms of validity, the predictive ability of PYD scores on outcomes 12-months later was evaluated. Overall, PYD scores at time 1 were found to significantly predict higher contribution, and lower depression and risky-behaviours 12-months later. Furthermore, this model was found to be equivalent across gender and age groups. Thus, across studies using the cross-sectional and longitudinal samples, the reliability and validity of the Five Cs PYD measure was supported. Previous research have failed to assess the in-depth psychometrics of the Five Cs measure (e.g., Lerner et al., 2005; Phelps et al., 2009; Bowers et al., 2010; Geldhof et al., 2013). Therefore, the current study adds a significant contribution to PYD research and the validity and reliability of the Five Cs measure. Furthermore, the Five Cs conceptual model of PYD is supported in an Irish context.

This study was the first to test the measurement invariance of the Five Cs Model of PYD cross-sectionally across age and gender groups. The goal was to evaluate whether the Five Cs measure performed consistently across gender and age groups. Using multiple-groups CFA, findings suggested that the measure functions similarly across younger and older adolescents. This supports previous research that illustrated measurement invariance of the Five Cs model over an eight-year longitudinal study (Geldhof et al., 2013). These results provide evidence that the five-factor index of PYD can be used to measure distinct dimensions of positive youth development across adolescence, and that these dimensions of PYD are equally important for younger and older adolescents. Given the changing developmental tasks that occur throughout adolescence due to the confluence of physiological, cognitive and social changes, it is important for researchers and practitioners to have a model of PYD, and an assessment measure of PYD, that can be used across this developmental period.

Looking at the latent mean scores across age groups, latent mean differences emerged showing that younger adolescents scored higher on caring, character, connection, and overall PYD scores. This indicates that PYD scores appear to decrease from younger adolescence to older adolescence. These results concur with the findings of Harter (1998), who reported that many of the domains of positive

self-concept decrease over the early adolescence years. The decrease in PYD may be explained by the transitions and negotiations that accompany a young person through adolescence. With new learning environments, new social situations, and changing desires and expectations in relation to autonomy, adolescents may doubt their own social abilities and feel less connected to parents, peers, and the wider world (Bowers et al., 2010). While Harter (1998) also found that these domains subsequently increase during later adolescence, the current findings, using two broad age groups, appears to only capture the downward trend in the data. This missing upward trend may be due to the mean age of the older adolescent group (approximately 16 years), with the upward trends potentially occurring a later (e.g., 17-19 years; Harter, 1998). This decrease in PYD may have implications for youth programmes and youth practitioners developing youth intervention programmes. This is discussed further below.

In terms of measurement invariance across gender groups, the level of scoring for some indicators differed for males and females. In particular, all indicators of the Caring factor were found to differ across gender. This suggests that differences in mean caring scores between genders may be biased due to males scoring on a lower range of scores. The result of this is that males and females may be equally empathetic, but females may score higher on the current measure due to starting off on a higher level of scoring in general. The finding of invariance at the metric (weak) level assures that comparisons can be made for the caring subscale as to the relationships between the factors (i.e., factor coefficients) across groups (Clench-Aas, Nes, Dalgard, & Aarø, 2011). Caution however, should be exercised in interpreting analyses involving comparison of latent means of caring between groups (Clench-Aas, Nes, Dalgard, & Aarø, 2011).

Latent mean scores of PYD and the Five Cs were also assessed, and indicated that females scored higher on the factors of caring, character and connection, while males scored higher on the factors of confidence and competence. This suggests that PYD may not manifest in a uniform manner across gender groups. These discrete differences between males and females on each of the Five Cs are in contrast to previous research that highlighted females scoring consistently higher on all Five Cs (Lerner et al., 2008). However, the finding that females scored higher on caring, character, and connection, and lower on competence and confidence compared to

males, is in line with previous research illustrating significant gender biases (Linley et al., 2007; McMullin & Cairney, 2004; Moksnes, Moljord, Espnes, & Byrne, 2010). For example, females have been observed to score higher on a number of interpersonal character strengths such as social intelligence and kindness (Linley et al., 2007), and lower on self-esteem compared to adolescent males (e.g., McMullin & Cairney, 2004; Moksnes, Moljord, Espnes, & Byrne, 2010). Previous research suggests that adolescent females may invest more into interpersonal success in terms of psychological and emotional resources, and are therefore more concerned about potential negative evaluation by peers compared to males (Rose & Rudolph, 2006). In addition, the present study's findings of gender differences in competence appear driven by gender differences in physical competence, where males typically score higher (Gentile et al., 2009). The scalar differences observed in caring and confidence across gender is consistent with previous research illustrating gender differences in empathy and self-esteem (e.g., Litvack, McDougall, & Romney, 1997; McMullin & Cairney, 2004; Moksnes, Moljord, Espnes, & Byrne, 2010). One possible explanation, proposed by Lennon and Eisenberg (1987), suggests that there may be a stereotype-confirming bias in self-reports of empathy, as both males and females know the stereotype of females as more emotional and more caring than males (e.g., Eagly & Steffen, 1984). Similarly, this may be expanded to include the factor of confidence, as masculine norms highlight the importance of confidence and emotional strength (O'Beaglaioich et al., 2014). Therefore, differences in the origin of scores on the caring and confidence factors of the PYD measure may be linked to differences in gender-role orientation, and/or a self-report gender-role conforming bias. These gender differences in the emergence and manifestation of PYD may have implications for youth practitioners, highlighting the need for gender-specific intervention programmes. Given that this is the first study to assess gender differences within the Five Cs measure, future research is necessary.

***Testing the Adolescent Self-Regulation model.*** The purpose of Study 2B was to examine the Adolescent Self-Regulation Model; to assess the role of prosocial values, peer influence, emotion regulation, future orientation, and SOC and their relationships with PYD. In addition, the relationships to positive and negative indices of development were also assessed, including risky-behaviours, depression, and contribution. Furthermore, in order to assess the predictive ability of the

Adolescent Self-Regulation Model over 12-months, Study 2C re-examined the predictive ability of the model using time 1 predictors, and time 2 outcomes.

At a cross-sectional level, the hypothesised direct positive influence of SOC, autonomy from peers, prosocial prototypes, and external-functional (EF) emotion regulation, and negative influence of external-dysfunctional (ED) emotion regulation strategies, on the outcome of PYD, were supported. The specified model explained over 87% of the variance across age- and gender specific models. Thus, this research has significantly added to the existing literature that has previously highlighted the role of SOC (Gestsdottir & Lerner, 2007; Gestsdottir & Lerner, 2008) and hopeful future expectations (Schmid et al., 2011a; Schmid et al., 2011b), in predicting the positive development of adolescents. The current research has illustrated the role of additional individual factors that influence adaptive developmental regulations. For instance prosocial prototypes, resistance to peer influence, external-functional (EF) emotion regulation strategies (e.g., seeking physical comfort from friends or family) and external-dysfunctional (ED) emotion regulation strategies (e.g., lashing out at others), consistently predicted PYD across age and gender groups. In addition, in line with criticisms outlined in Chapter 2 (see Section 2.5), prosocial values were found to be a stronger predictor of PYD (and contribution and risky-behaviours) than SOC (see Appendix P for standardised regression weights). Notably, in contrast to previous research (Schmid et al., 2011a), future orientation was not observed as a significant predictor of PYD in the overall sample. Over, results support previous research that has illustrated the beneficial role of prosocial values, autonomy from peers, and adaptive emotion regulation as essential ingredients for successful adolescent development (Eccles & Barber, 1999; Eisenberg et al., 2007; Steinberg & Monahan, 2007).

Similar findings were found using the longitudinal sample in Study 2C, as this model explained 66% of the variance in PYD and 37% of the variance in contribution over 12-months. For instance, time 1 predictors of resistance to peer influence, prosocial prototypes, external-functional (EF) emotion regulation and external-dysfunctional (ED) emotion regulation strategies were significant predictors of PYD 12-months later. Specifically, more positive attributes towards prosocial behaviour, greater autonomy from peers, greater EF emotion regulation strategies, and lower ED emotion regulation strategies predicted PYD 12-months later.

Notably, while SOC scores consistently predicted PYD in the cross-sectional sample, this relationship was non-significant in the longitudinal model. Conversely, internal-functional emotion regulation was a significant positive predictor of PYD in the longitudinal sample, but was consistently non-significant in the cross-sectional models. Thus, compared to previous research that illustrated the predictive ability of SOC on PYD over 12-months (Jelicic et al., 2007; Gestsdottir & Lerner, 2009), the current research highlights the role of prosocial prototypes, autonomy from peers, and adaptive emotion regulation in predicting PYD over 12-months. As previously outlined, although research has illustrated a significant relationship between SOC and positive outcomes of PYD and contribution over 12-months, this relationship was weak (e.g., Gestsdottir & Lerner, 2009). This is further supported as the current research found that SOC was a consistent non-significant predictor of contribution. Greater orientation towards the future and more positive prosocial prototypes consistently predicted contribution in the cross-sectional and longitudinal models. Adaptive emotion regulation strategies also predicted contribution, but these relationships were not consistent (e.g., EF predicted contribution consistently across the cross-sectional models, but not for the longitudinal model). Thus, the current study illustrates that while SOC may predict positive outcomes at a cross-sectional level, other aspects of adolescent self-regulation such as emotion regulation may play a stronger role in predicting positive development over time.

Finally, looking at negative developmental outcomes of risky-behaviours and depression, few consistent significant results emerged. For instance, higher SOC scores, indicating the use of more goal-directed cognitive and behavioural strategies, predicted lower risky-behaviours 12-months later. However, this relationship was not found in the cross-sectional models. Looking across depression and risky-behaviours, a consistent predictor of both was external-dysfunctional (ED) emotion regulation strategies, with higher ED emotion regulation strategies predicting higher depression and risky-behaviours. Overall, the amount of variance explained for the negative outcomes in the current model ranged from low to high (risky-behaviours range = 27% [longitudinal sample] – 74% [girls only]; depression range = .09 [longitudinal sample] - .34 [older adolescents only]). While the model consistently predicted less variance in depression, the variance explained in risky-behaviours varied in specific samples (e.g., 50% in boys only; 74% in girls only group). Thus,

these results may suggest that pathways to depression and risky-behaviours are different across gender and age-groups. This is in line with previous research that highlighted different developmental trajectories in antisocial behaviour for boys and girls (Silverthorn & Frick, 1999). In addition, the measurement and rate of outcomes may be issues in the current research. For example, the rate of risky-behaviours and depression in the current sample was low. Furthermore, risky-behaviours were measured using self-report to assess engagement in actual behaviours. During adolescence, opportunities to engage in risky-behaviours may be limited due to their social context (e.g., monitoring and supervision of parents/other adults). Future research may utilise variables such as impulsivity (Edmonds, Bogg, & Roberts, 2009), and sensation seeking (Zuckerman, 2007), that have been previously highlighted as predictors of engagement in risky-behaviours in adolescents. Furthermore, the low variance of depression may be explained by the lack of variables included in the model examining interpersonal factors that have been linked to depression, such as the importance of relationships during adolescence and interpersonal stress (Larson & Ham, 1993; Rudolph, 2002). Overall, future research is needed to illuminate the shared and gender-specific factors that may predict both risky-behaviours and depression in boys and girls.

***Assessing change in PYD over 12-months.*** The third goal of Study 2 was to assess how PYD changes over 12-months and what self-regulation characteristics are associated with positive change over 12-months. Thus, the stability of Irish adolescent's positive youth development scores were examined over 12-months using both group- and individual-level analysis. Furthermore, the study analysed the characteristics of the different groups of change, in order to examine whether they differ significantly on the predictor variables at time 1. One-way ANOVAs were used to examine whether resistance to peer influence, future orientation, emotion regulation, prosocial values, SOC, contribution, risky-behaviours and depression at time 1, and parental style measured at time 2, differed according to membership of different change groups (e.g., increasing PYD scores versus decreasing PYD scores). Thus, the key characteristics of adolescent self-regulation and development were examined to obtain a further insight into the profiles of change in PYD scores, and gain an understanding into what factors underlie optimal development.



First, analysis of group-level stability revealed moderate to large levels of stability in PYD scores over 12-months. In line with previous research (Geldhoff et al., 2013), this indicates that Irish adolescents as a group tend to keep the same rank order on PYD scores over 12-months. Notably, the correlation between the confidence subscale at time 1 and time 2 was the lowest, suggesting that self-worth and positive identity could be more amenable to change than other subscales, and therefore, more open to development through training and intervention. However, previous research on confidence, or self-efficacy (i.e., one's perceived capabilities for learning or performing actions at designated levels; Bandura, 2001), has demonstrated that confidence may be context and time specific (Schunk & Pajares, 2002). For example, self-efficacy is sensitive to contextual factors (e.g., changing environmental conditions), and personal factors (e.g., mood, level of motivation). Therefore, the confidence factor of the Five Cs measure of PYD may be amenable to change in the short-term, but less so long-term as these changes may not be internalised. Furthermore, previous research has reported conflicting developmental changes in self-efficacy. For example, previous research has reported both declining self-efficacy beliefs during adolescents (Urdan & Midgley, 2003), while other research has reported domain specific increases in language and mathematics self-efficacy (Zimmerman & Martinez-Pons, 1990). This illustrated the domain-specific nature of self-efficacy. Overall, it is likely that as adolescents develop, they begin to consider cultural expectations and standards of behaviour that will influence their self-efficacy (Schunk & Meece, 2006). Such standards and expectations of older adolescence, and on into the period referred to as emerging adulthood (18-25 years), may elicit a sense of ambiguity and instability, subsequently leading to declines in self-efficacy (Arnett, 2000). PYD programmes for young people facing this period may focus on both domain-specific self-efficacy (e.g., academic), and also broader contextual and personal factors (e.g., how to communicate clearly, how to set goals) that may be sustain and increase self-efficacy over adolescence and into adulthood.

Second, the current study used cluster analysis to examine individual-level differences in stability of PYD. Four groups of change were observed; increasing, low-stable, decreasing, and high-stable, with each group significantly different to all others. These groups show that, similar to previous research assessing trajectories of change over multiple time-points (e.g., Lewin-Bizan et al., 2010; Zimmerman et al.,

2008), Irish adolescents also illustrate patterns of PYD scores that represent both stability and change. It is notable that diverse patterns of change emerged over a relatively short-period (i.e., 12-months). While two cluster groups represented stable PYD scores (i.e., high-stable, low-stable), two groups also represented change (i.e., decreasing and increasing). The number of changes that occur during adolescence over a 12-month period is immense, and any and all of these changes may influence subsequent positive development. Most developmental datasets rely on self-report data over 12-months (e.g., Lerner et al., 2005; Phelps et al., 2009; Geldhof et al., 2013). Little is known about the negotiation of adolescent's individual needs and contextual demands on a day-to-day, or weekly, basis. Thus, future research should address this methodological limitation in order to illuminate the more nuanced temporal characteristics of development during adolescent development.

Finally, the characteristics of each cluster group were examined in order to obtain further understanding of the factors that underlie optimal development. A number of key findings emerged. Significant differences were observed between the optimal group (i.e., high-stable) and the other cluster groups, with the optimal development group displaying higher SOC, greater autonomy from peers, higher future orientation, more adaptive emotion regulation strategies, higher contribution, and lower depression and risky behaviours at time 1. Building upon our previous results illustrating that a number of individual factors such as autonomy from peers, adaptive emotion regulation, and SOC can predict PYD both cross-sectionally and longitudinally, the current findings further illustrate that individual factors can clearly differentiate optimal development in adolescence from sub-optimal development. In line with previous research (Zimmerman et al., 2008), SOC predicted membership in the optimal development cluster, with higher SOC scores related to high-stable PYD scores over 12-months. Higher future orientation scores were also related to membership of the optimal development cluster group. This is in line with previous research that found the related construct of hopeful future expectations predicted membership of the optimal development trajectory (Zimmerman et al., 2008). Consistent with previous findings in the current study that showed adaptive emotion regulations were predictive of PYD, those in the optimal PYD group were also characterised by greater use of adaptive emotion regulation strategies, and less use of maladaptive emotion regulation strategies.

Thus, emotion regulation is a consistent predictor of PYD, and optimal development over 12-months. In addition, those in the optimal PYD cluster reported higher parental responsiveness, higher autonomy-granting, and higher demandingness compared to other groups. This is in line with PYD research (Bowers et al., 2011) and broader research showing that adolescents with parents high on both demandingness and responsiveness traits (i.e., authoritative parenting style) are likely to illustrate a variety of positive adolescent outcomes (e.g., school performance, social competence and prosocial behaviour; Collins & Steinberg, 2006; Dornbusch et al., 1987; Steinberg, et al., 1994). Notably, in contrast to previous research (Hawkins et al., 2008; Zimmerman et al., 2008), no gender differences were observed between the PYD cluster groups, with equal males and females in each cluster group.

Overall, research assessing the characteristics of change in PYD is limited. Previous research has illustrated the role of higher SOC, hopeful future expectations, positive parenting and gender (i.e., female) in predicting membership of optimal development groups (Bowers et al., 2011; Zimmerman et al., 2008). The current findings significantly add to the literature on characteristics of optimal adolescent development. By building a profile of the individual (e.g., autonomy from peers) and contextual (e.g., parenting style) factors of adolescents who are developing positively over time, these findings can provide a base from which to explore ongoing processes that may further encourage positive development during adolescence. The characteristics of optimal development clusters point to important possible avenues for PYD programmes and interventions. These are discussed further below (see Section 8.5.3).

### **8.3 Limitations**

The limitations associated with individual studies were discussed throughout this thesis. However, several limitations common across both studies will be outlined.

First, the potential lack of generalizability must be noted. The current research was conducted in Post-Primary schools with samples of Irish adolescents from the Mid- and North-West of Ireland. Given that this area is primarily rural, those who participated could potentially differ from young people from more urban,

densely populated regions. Furthermore, it is likely that youth from marginalized communities, such as ethnic minorities (e.g., 0.4% Asian ethnicity), and youth who have already dropped out of school, are underrepresented in the current thesis, leading to sampling bias. In addition, previous research has acknowledged the difficulties of gaining access to the desired population in schools (Harrell, Bradley, Dennis, Frauman, & Criswell, 2000). In the current studies, all relevant classes within schools were invited to participate (i.e., 1<sup>st</sup> year to 5<sup>th</sup> year). However, as displayed in Appendix Q, when comparing the distribution of participants across the different year groups to the national figures of post-secondary school students, a number of trends emerge. First, across studies, participants in younger classes were more likely to participate than students in older classes. For instance, first year students made up the highest proportion of students for studies 1A, and 1B, and the second highest proportion for Study 1C and Study 2. Second, some class groups were underrepresented in some studies (e.g., 5<sup>th</sup> year; 7.5% of sample in Study 1A, and 0% of sample in Study 1B), while overrepresented in other studies (e.g., 5<sup>th</sup> year, 24% of sample in Study 1C, and 27.4% of sample in Study 2). Third, gender differences in the number of participants in each study were also observed (see Appendix Q). As previously outlined, studies 1A and 1B were imbalanced such that more than 70% of participants were male. While Study 1C (54.24% male, 45.76% female) and Study 2 (57.70% male, 42.30% female) were closer to a gender balance in line with national figures (50.65 males, 49.35% females), the representativeness of each sample may be questioned. The non-representative sampling distribution between classes may be due to the role of gatekeepers in each school. The selection of classes was determined by permission from the school Principal or class teachers. These gatekeepers may be subject to selection bias in selecting classes that they considered “good” or “well-behaved”, and therefore willing to engage in a novel research experience, while other classes may be labelled “difficult”, and therefore avoided. This issue of sampling bias may account for the mean PYD scores above the scale midpoint, although this is commonly found in research on happiness (Gardner et al., 2008), and is in line with previous PYD research (Bowers et al., 2010). Future research should use a variety of data collection methods, such as paper-and-pencil techniques and online recruitment, with sampling techniques such as stratified sampling, to reduce potential sampling bias.

Second, a further limitation of the current study relates to the manifestation of PYD in Irish adolescents. This thesis is the first in-depth examination of the psychometric properties of a measure of PYD in Irish adolescents. While the structure and validity of the Five Cs Model were established in Study 2, future work should conduct a qualitative investigation of the positive development expectations of Irish young people, including children and emerging adults. Such a study would determine whether the factors of caring, character, competence, confidence, and connection are idiosyncratic or robust. Furthermore, a participatory research method, such as interactive management (Warfield & Cárdenas, 1994), could be utilised with adolescents in order to further derive the processes and mechanisms underlying positive youth development. For instance, exploring the idea of “positive development” and the Five Cs with a number of groups of diverse adolescents could highlight the perceived antecedents, processes, and barriers to positive development as perceived by young people.

Third, a limitation of the current study is the lack of more specific tests of validation. For example, in order to test the assumption that PYD is indicative of positive, healthy development, comparative research using youth within the criminal justice system, evidencing maladaptive development, could be compared to a community-sample in order to further validate the validity of the PYD measure. In addition, given that the scores on the measure of risky-behaviours were generally low, and potentially subject to ceiling effects, including a sample of youth who score higher on risky-behaviours could also clarify the relationships between aspects of adolescent self-regulation and risky-behaviours.

Fourth, another limitation of the current thesis is the use of self-report measures. Self-report measures are widely criticised as the subjective ratings are affected by a host of methodological and individual factors including shared method variance, error variance, respondent attitudes, cognitive processes, mood, and personality (e.g., Spector, 1994). Although the reliability and validity of the measures used in the current thesis were deemed appropriate, future research should use alternative methods and multi-informants in order to measure the constructs associated with positive development. For instance, self-report or parent/teacher diaries or behaviour logs could be used to track actual behaviour that can be defined as “contributing”. Furthermore, experimental methods could be used to investigate

the effect of manipulating emotion regulation, future orientation, prosocial values, and/or resistance to peer influence and the subsequent impact on positive and/or negative behaviours.

Fifth, a design limitation of Study 2B and Study 2C was that the specified relationships between factors of adolescent self-regulation and outcomes of PYD, contribution, depression and risky-behaviours were linear. However, it is likely that participation in positive and/or negative behaviours can influence behaviour in multiple ways. For example, some authors consider goal-selection as an important factor in developing depression (Salmela-Aro, Nurmi, Saisto, & Halmesmäki, 2001), while others illustrate the role of depressed affect in determining goal-selection (Davis, Kirby, & Curtis, 2007). Thus, future research should use additional times of measurement within a cross-lagged panel design to establish understanding of the nature of the relationships between adolescent self-regulation, and positive and negative indices of behaviour. Cross-lagged panel designs can be used to draw conclusions about the direction of association between variables (Kenny, 2005).

Finally, a further limitation of this work is that gender and age differences, illustrating that girls score higher on PYD compared to boys, or that younger adolescents score higher than older adolescents, may be misconstrued by readers as suggesting that boys or older adolescents are more disadvantaged, or “less good” than girls or younger adolescents. The goal of this research is not to establish a hierarchy, but to establish a measure of positive development across adolescence, and understand variability across age and gender groups. Gender and/or age differences must be construed as indicative of differences in the emergence and manifestation of PYD in different groups. The conceptualisation of young people evincing low PYD scores must draw attention, not to what is wrong in terms of characteristics of these youth, but rather what is wrong with the relationship of these youth with their context, such as schooling (Riele, 2006). Thus, future research needs to be mindful of the dominant conceptualisation of youth who score low on the PYD measure, as well as those who display “optimal” PYD developmental trajectories.

## 8.4 Overall Implications

The application of a PYD perspective and the current findings of this thesis have a number of implications for theory, policy and practice. Implications in each of these areas are outlined below.

**8.4.1 Theoretical implications.** Central to the studies outlined above is the testing of an expanded model of adolescent self-regulation. As previously outlined, intentional self-regulation refers to goal-directed behaviours that are aimed at harmonising demands and resources in the environment, in line with personal goals (Gestsdóttir & Lerner, 2008). When the relationship between an individual and their context is mutually beneficial, adaptive regulations (i.e., PYD) occur. However, intentional self-regulation consists of both conscious and automatic goal-directed behaviour (Gestsdóttir & Lerner, 2008). That is, goal-directed behaviours that are aimed at adjusting the demands and resources available in the environment in line with personal goals may be influenced by a conscious, reasoned, cognitive system, and a non-conscious, reactive, socio-emotional system (i.e., a dual-process model of decision-making; Casey, Getz & Galvan, 2008; Gibbons & Gerrard, 1995; Kahneman, 2011; Metcalfe & Mischel, 1999; Reyna, 2004; Steinberg, 2008). Previous research on PYD has focused almost exclusively on the role on the SOC model (Freund & Baltes, 2002) in predicting PYD (Gestsdóttir & Lerner, 2007; Gestsdóttir & Lerner, 2008; Napolitano et al., 2011). However, the SOC model of intentional self-regulation only assesses cognitive and behavioural aspects of intentional self-regulation. A critique of self-regulation literature, and research on adolescent self-regulation, highlighted a number of individual factors that could also influence adaptive regulations, operationalised as PYD. Thus, the current study examined the role of prosocial prototypes, resistance to peer-influence, emotion regulation, and future orientation as relational factors that influence the relationship between the individual and their context, and subsequent PYD.

Consistent throughout the results of the current study was the central role of emotional, interpersonal, and individual factors that predicted and characterised PYD. For instance, the current study expanded our understanding of both the direct and indirect influence of emotion regulation strategies on positive and negative indices of development. Little research has previously examined the relationship

between emotion regulation and positive behaviour (Silk et al., 2003). Thus, the current study illustrates a potentially fruitful avenue of future research by highlighting the significant role of emotion regulation in positive adolescent development.

Furthermore, the current study developed and tested a measure of prosocial prototypes, and the influence prosocial prototypes have on PYD. Consistent across cross-sectional and longitudinal analyses, more positive characteristics (e.g., smart) attributed to prosocial behaviour predicted higher PYD and contribution scores. This may be linked to the propensity view of subjective well-being, where a dispositional component operates like a trait and accounts for the stability in subjective well-being scores, despite environmental changes (Diener, Napa-Scollon, Oishi, Dzokoto, & Suh, 2000; Kozma, Stone, & Stones, 1999). It is possible that the prosocial prototype measure is assessing the values associated with prosocial behaviour, or a disposition towards positive behaviours. Both are likely to be related, as they are no doubt influenced by the cultural norms of the adolescent's context (Diener et al., 2000). As this is the first study to assess the impact of prosocial prototypes on PYD, future research is needed to clarify the theoretical underpinnings of these relationships.

Although the current study using a dual-process framework examined a large amount of variance in PYD, more work is needed. For instance, cross-sectionally, only emotion regulation was observed to influence PYD indirectly via SOC. Therefore, other factors may predict SOC, and subsequently influence PYD. Notably, time 1 future orientation, prosocial values, and internal-functional emotion regulation strategies were illustrated as significant predictors of time 1 SOC scores, when examining time 2 outcomes. While the current research added significantly to the literature on predictors of PYD, more research is needed to assess the underlying predictors of SOC behaviours.

Overall, the dual-process framework was a useful perspective to assess the direct and indirect relationships of aspects of adolescent self-regulation on positive development. The current study added significantly to the theoretical development of the PYD field of research. A number of individual factors were found to predict



PYD, both cross-sectionally and over time. This illuminates potential avenues for policy and practice in order to promote PYD across adolescence.

**8.4.2 Policy implications.** In line with the change in focus of youth development approaches from intervention to promotion, the validation of a measure of PYD may inform the role of PYD in emerging education practices in Ireland. From early adolescence, schools “begin to dictate many consequences for the present and future lives of young people”(Elmore, 2009, p. 194). Academic success is crucial for young people to grow into adults who fully participate in the economic, social, and civic activities of contemporary society. Recent Irish education policy documents, such as the “Guidelines Towards a Positive Policy for School Behaviour and Discipline” (Department of Education and Science, 2006), and the National Education Welfare Board’s (NEWB) “Guidelines for Code of Behaviour” (2008), both espouse principles that are in line with the PYD perspective. For instance, the “Guidelines Towards a Positive Policy for School Behaviour and Discipline” (2006) envisions a contextual perspective of youth behaviour, where codes of behaviour are considered within the context of the school, the school-home and the school-community relationships. This is an acknowledgement that the values advocated within the home and within the wider community that the school serves, may differ from the values which the school tries to promote. This approach is in line with the PYD approach as connectivity between young people’s ecological levels is emphasised in order to influence the individual’s thriving. Furthermore, the NEWB “Guidelines for Code of Behaviour” (2008) includes a number of basic principles that are in line with a Positive Youth Development (PYD) framework; for example, a focus on the school as a whole, promoting good behaviour, and recognising relationships, are highlighted as crucial to the development of a positive school ethos, and a context in which a young person can thrive. From a policy perspective, a PYD framework represents a theoretically grounded, evidence-based approach to promoting youth development.

At a broader level, the PYD vision of youth development offers a new vocabulary to stakeholders in the policy-making domain that facilitates discussion of facets of youth behaviour that are important to promote, in addition to behaviour that is important to decrease. No consensus on positive markers of personal and social development exist for adolescents in Ireland as they are seen as ephemeral, abstract,

or even “impossible” to measure (Lerner, 2007). A PYD perspective subsequently allows policy-makers to identify and promote the strengths of youth, rather than merely minimising negative behaviours. For example, the Five Cs Model of PYD (Competence, Confidence, Character, Connection and Caring) provides policy-makers with an assessment tool to measure the presence of these characteristics of individual thriving across settings (e.g., school, community, home). Thus, while different settings may promote different values or behaviours, the PYD perspective provides a vocabulary and assessment tool for use across contexts.

Although recent work has looked at the barriers and facilitators of wellbeing in Ireland, (Hogan et al., in press), this has not specifically included the measurement of positive functioning in young people. Thus, the PYD perspective, armed with a valid measure and a strengths-based vocabulary, furthers the ability of education policy to focus on the key principals of education, namely, academic, personal, and social development.

**8.4.3 Practice implications.** The PYD perspective may also be used to inform practice in youth interventions in Ireland. For example, Garda Youth Diversion Projects (GYDP's) were established with the aims of targeting early school leavers and children 10 years and over that were involved in anti-social behaviour. These projects, targeting disadvantaged areas and/or areas identified as high-risk, were charged with the remit of reducing crime. The groups use professional youth workers to intervene with the targeted young people, with the groups managed and run by the Gardai, Prison Service and Probation officers. Although crime reduction is a laudable goal, youth interventions managed by the Gardai create practical issues. The inference is that youth interventions run by Gardai have at their core the goals of reducing and eliminating crime, they are not professionally concerned with the development of young people (Walther, Hejl, & Jensen, 2002). Underlining this, is the long-term objective of the GYDP's, that is “to enable the target group of 10-18 year olds to integrate into the labour force in a systematic manner and to prevent them becoming unemployable” (Walther et al., 2002, p. 7). Thus the purpose of the GYDPs is to reduce crime and to instil established values on young people, not to promote positive development or thriving in any sense. This programme then, is merely an alternative educational agency for those who resist the established educational system in which social values are

inculcated (Walther et al., 2002). The use of a PYD perspective in evaluating the aims, objectives, and processes underlying youth-based interventions such as the GDYPs, can lead to a strengths-orientated, skill-promoting, rather than a risk-averse, crime-reduction programme. Furthermore, as previously outlined, the conceptualisation of young people evincing low PYD scores must draw attention, not to what is wrong in terms of characteristics of these youth, but rather what is wrong with the relationship of these youth with their context (Riele, 2006). In this way, interventions may be aimed at both the individual and context (Durlak & Weissberg, 2007).

## 8.5 Directions for Future Research

The results of the current series of studies illustrate the need for further research in the area of adolescent positive development. A number of potentially fruitful avenues of future research are outlined, including; theoretical refinement, cross-cultural testing of the Five Cs Model of PYD, and promoting PYD in adolescents.

**8.5.1 Theoretical refinement.** The critique of the role of intentional self-regulation in PYD outlined in Chapter 2 and the results of the current thesis create a number of difficult questions for the PYD paradigm. It is possible that researchers may find the breadth of possible influences on PYD and their mechanisms difficult to navigate. First, although the current thesis illustrates direct relationships between aspects of adolescent self-regulation, such as resistance to peer influence, and PYD, these relationships are likely to be more complex. For instance peers provide a necessary role in the socialisation of adolescent behaviours, broadening their social arena (Lashbrook, 2000). The bi-directional influences within friendships can be both positive and negative (Sumter et al., 2009). In the current thesis, the relationship between resistance to peer influence and PYD was found to be positive, with higher autonomy from peers associated with higher PYD. Future research may examine the more nuanced bidirectional impact of peers on positive development.

Furthermore, the theoretical relationships between PYD and negative indices of development have not been sufficiently explained, as low levels of explained variance, especially in depression, was observed. Previous research has illustrated that positive and negative behaviours do not merely display an inverse relationship

(Lewin-Bizan et al., 2010). Outlining the processes of these relationships would allow researchers to test the mediational factors that contribute to the development of positive, healthy adolescents.

Second, issues regarding the factor analytic procedures used in the PYD literature may warrant further investigation. In Confirmatory Factor Analyses (CFA), the researcher specifies the predicted associations between constructs, and computer software (e.g., AMOS, MPlus), is used to determine whether the data fits the specified model. In contrast, using Exploratory Factor Analyses (EFA) techniques, where the researcher does not specify an *a priori* model, does not constrain the analysis and allows the software to statistically derived factors. Thus, if an identical factor structure is demonstrated using independent samples, the probability of the emerging model being a recurring eccentricity is small (DeVellis, 2012). Therefore using EFA is, according to some authors, a more rigorous process of model specification (DeVellis, 2012). However, in the current thesis, expert guidelines for conducting CFA analysis were followed (Byrne, 2010; Kline, 2011; Thompson, 2004), increasing confidence in the study findings. In future research, the use of additional exploratory factor analyses would strengthen support for the Five Cs Model of PYD.

**8.5.2 Cross-cultural testing of the Five Cs Model of PYD.** While the current research establishes the use of the Five Cs Model as a measure of PYD within an Irish context, future research should investigate the cross-cultural psychometric properties of the measure in adolescents in Ireland and the United States, in addition to non-western cultures. First, the cross-cultural validity of the Five Cs Model of PYD cannot be validated across Irish and American adolescents simply by the finding that factor structures, variances, reliabilities, and criterion validity are generally equivalent. According to recommendations, the invariance of the scale across groups is a prerequisite that must be systematically assessed (Chen, 2007; Chen, Sousa, & West, 2005). For instance, while the current thesis found that the physical appearance subscale did not improve the measure of PYD in Irish adolescents, while it improved the model in adolescents from North America, the functioning of other indicators must also be systematically assessed for invariance across groups. Furthermore, international research highlighting the importance of local values and cultural traditions are rare (Evans & Ave, 2000). While the PYD

model has been acknowledged in collectivist cultures such as India (Pryce, Niederkorn, Goins, & Reiland, 2011), further research is needed to assess the manifestation of PYD across cultures.

**8.5.3 Promoting PYD in adolescents.** A key tenet of the PYD literature is a focus on development and potential for change in adolescence (Lerner, 2009). By enhancing positive characteristics, the potential of all adolescents, including those who experience difficulties, can be fulfilled (Commission on Positive Youth Development, 2005). PYD programmes have previously been shown to improve a number of outcomes, such as children's social and emotional competencies, increase prosocial behaviour, and reduce levels of negative behaviours at home, school, and in the community (Catalano et al., 2002; Durlak & Weissberg, 2007). However, while PYD programmes share a strengths-orientated vision of youth, programmes lack a standardised approach to the measurement of positive outcomes, and generally lack a standardised focus on the underlying processes of PYD (Catalano et al., 2002; Durlak & Weissberg, 2007). A plethora of social and emotional skills are found to be the focus of PYD programmes, including self-regulation, self-efficacy, coping strategies, perspective taking, empathy, interpersonal problem-solving, decision making, and positive connections to school, family, and other adult role models (Durlak & Weissberg, 2007). However, there is a lack of theoretically-based explanations for the inclusion of many of these variables in PYD programmes, and a dearth of research understanding the chain of effects that programmes have on intermediate factors and behavioural outcomes (Catalano et al., 2002). The promotion of social and emotional skills must be situated in a coherent, theoretically-based framework that stipulates the processes through which the skills develop and influence PYD. By assessing predictors of both positive and negative outcomes, the current thesis adds to the literature on what individual skills may simultaneously increase positive outcomes and decrease negative outcomes. The inclusion of this approach in PYD programmes can help clarify issues regarding what programmes achieve, how they achieve them, and for what participants (Durlak & Weissberg, 2007). Future research should extend this research and assess the complex relationships between the predictors, mechanisms, and outcomes of PYD.

## 8.6 Conclusion

The current research represented novel research on Irish adolescents' positive development and the role of individual, emotional, and attitudinal factors of self-regulation in influencing PYD. These investigations were warranted due to concerns underlying previous measurement tools of PYD, and identified gaps in the literature concerning the role of individual, emotional, and attitudinal factors of adolescent self-regulation in positive development. A measure of adolescent prosocial values was created, and the prosocial values scale, along with other factors, was found to predict PYD using both cross-sectional and longitudinal analyses. These findings broadened previous models outlining the predictors of PYD. Furthermore, the measure of PYD was tested in Irish adolescents and subjected to extensive psychometric testing. Limitations of the current research were discussed and addressed. In addition, directions for future research, and possible implications for policy and practice, were outlined. Overall, results from the current studies suggest that the Five Cs Model of PYD possesses good psychometric properties, and a number of factors of adolescent self-regulation are predictive of PYD. Consequently, avenues for future research and intervention are opened for researchers looking for multiple pathways to elucidate and promote positive development in adolescents.



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## Appendices

### Appendix A

#### Letter of Recruitment (Study 1A and Study 1B)



School of Psychology,  
NUI, Galway.

To Whom It May Concern,

A research team from the School of Psychology in the National University of Ireland, Galway, are currently undertaking research looking at young people's views and perceptions of prosocial behaviour. This research is examining the typical images of prosocial behaviour that adolescents aged 12-18 years old hold.

Currently, the research project is contacting schools and youth organisations that may be interested in assisting the research project recruit young people. In order to complete this research, we hope to ask young people to complete questionnaires. The questionnaires involve some simple questions about how clear young people see prosocial behaviour or the characteristics young people associate with prosocial behaviours. All individual results will remain completely confidential and the results obtained in this study will only be used at a group level.

Your school/organisation is one of a number that have been selected to participate in this research. Parental written consent and students' assent will be sought prior to participation. All information will remain anonymous, as names and contact details are gathered but stored separately and only available to the research team. A summary of the findings of this study will be presented to all participating groups that take part, following completion of the study.

Following your consent, a letter of invitation and consent form will be given to all potential participants aged 12-18 years old by the researcher in the facilitating organisation. The researcher will return at a predetermined time and those who return the consent forms will then be given a short questionnaire (10-20minutes).

It is envisaged that minimum disruption will be made to the facilitating school/group. If you would like to discuss further the proposed research (see attached) and explore the possibility of facilitating recruitment of participants, then please feel free to contact the researcher at the details below. Your help is greatly appreciated.

Yours sincerely,

Ronan Conway, Researcher.

Tel: 087 2836539

Email: [r.conway4@nuigalway.ie](mailto:r.conway4@nuigalway.ie)

## Appendix B

### Information Sheet (Study 1A & Study 1B)



#### School of Psychology

#### *Child & Youth Research PhD*

### **PARTICIPANT INFORMATION**

#### *Youth Images of Behaviour*

You are invited to take part in this research study. Before you decide, it is important that you understand why the research is being done and what it will involve. This *Participant Information Sheet* tells you about the aims, risks and benefits of this research. If you agree to take part, we will ask you to sign a *Consent Form*. If there is anything that you are not clear about, we will be happy to explain it to you. Please take as much time as you need to read this information. You should only consent to participate in this research study when you feel you fully understand what is being asked of you, and you have had enough time to think about your decision. Thank you for reading this.

#### **• WHAT'S IT ALL ABOUT?**

Ronan Conway, a Child & Youth PhD student, supervised by Dr. Caroline Heary, NUIG, would like to carry out a study that is concerned with understanding young people's views of positive behaviours (e.g. taking part in a youth group). This study will ask how young people view people their own age who engage in different types of positive behaviour. The study involves filling out a questionnaire. This should take about 10-20 minutes. You have been selected to take part in this study because it is aimed at getting the opinions of young people between the ages of 12-18 years old.

#### **• DO I HAVE TO TAKE PART?!**

It is up to you to decide if you want to take part. If you decide to take part you will be asked to sign a *Consent Form*. If you change your mind after signing the consent form, you are still free to withdraw at *any time* and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect your rights in any way.

#### **• WHAT HAPPENS IF I DO TAKE PART?**

We are sending this information leaflet to you to allow you some time to think about the study. If you are happy to participate, we would ask you to sign the consent form

and return it when the researcher returns to the organisation in order to participate. Otherwise, you may contact the researcher directly at the details given below, in order to arrange return of consent forms.

The next step after returning the consent form is that you will be given a short questionnaire to complete. This questionnaire will include questions about either; 1) *how clear* an image is in your mind, of a young person your age that carries out that behaviour; or 2) questions about how you would *describe* different images, and other *words* (both positive and negative) that may be associated with the behaviour. All information given is strictly confidential and only available to the research team. All questionnaires and consent forms are stored separately, making all information anonymous.

When answering questions, please try to be as honest as possible. All information is generally confidential and is only available to the research team. No-one outside the research team will see your answers. However, in the event that a young person (under 18) tells us something that indicates they are at risk, we may need to inform parents or a staff member in the facilitating organisation.

• ***IS THIS GOING TO TAKE LONG?!!***

Apart from reading these forms, the research process will take approximately 20-25minutes. Filling in the questionnaire should take approximately 10-15minutes, allowing 5-10minutes for reading / questions. Any questions about the questionnaire can be directed to the researcher, Ronan, by phone or email. See contact details below.

• ***WHAT'S THE UP SIDE OF ALL THIS?***

Possible benefits of participating in the current research are that participants get an experience of what it's like to take part in psychological research, and in addition help research that aims to promote positive development of young people.

• ***WHAT IF I CHANGE MY MIND?***

You are entitled to change your mind about participating in this at any time without disadvantage or penalty.

• ***WHO DO I CONTACT FOR MORE INFO?***

Ronan Conway may be contacted at any time regarding questions about this study at [r.conway4@nuigalway.ie](mailto:r.conway4@nuigalway.ie) or by telephone at 091 495123. The research supervisor, Dr. Caroline Heary, may also be contacted at [caroline.heary@nuigalway.ie](mailto:caroline.heary@nuigalway.ie), or through the School of Psychology at 091 493101. If you have any concerns about this study and wish to contact someone in confidence, you may contact: **The Head, School of Psychology, national University of Ireland, Galway at 091 493101.**

Appendix C

Consent (Study 1A, Study 1B, Study 1C)



**School of Psychology**

*Child & Youth Research PhD*

**PARTICIPANT CONSENT FORM**

**Participant ID No.:**\_\_

*Youth Images of Behaviour:*

**Name of Researcher:**      **Ronan Conway**

**Please initial box**

1. I confirm that I have read the information sheet for the above study and that I understand the information given.

☐

2. I am happy that I have had enough time to think about the information and have had the chance to ask the researcher questions.

☐

3. I understand that participation is voluntary and that it is possible to withdraw at any time, without giving any reason, without any legal rights being affected.

☐

4. I, the participant, agree to take part in the study

☐

*Remember, even though you agree to participate in both parts of the study, you may choose to withdraw at any time.*

*Please sign below*

_____	_____	_____
Name of Participant	Date	Signature

\_\_\_\_\_

Parent/Guardian Signature (if participant is aged 18 years or less)

*By signing, the Parent/Guardian agrees that they have read and understand the information provided, and agree that the participant may take part in the above study*

\_\_\_\_\_

Signature of Researcher



## Appendix D

## Questionnaire (Study 1A)

*Below are listed a number of activities. **Please circle** how vivid and clear your images are of **someone your age** that carries out these behaviours; (i.e. **circle 1** for not very easy and unclear, or **circle 7** for very easily and very clear). i.e. when you imagine someone your age carrying out this behaviour, you can easily picture it in your mind and have a sense of what that person may be like.*

*Example:*

	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
Example: Someone who goes surfing	1	2	3	4	5	6	<b>7</b>

This indicates a **VERY** clear and vivid image of someone your age who goes surfing.

Please complete the following, imagining someone **YOUR AGE**:

	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
1. Someone who volunteers in the community	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
2. Someone who takes part in drama/theatre	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
3. Someone who exercises regularly	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
4. Someone who smokes	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		

5. Someone who helps their neighbours	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
6. Someone who is a class/group leader	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
7. Someone who drinks alcohol	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
8. Someone who <i>does not</i> smoke	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
9. Someone who helps parents with chores	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
10. Someone who promotes environmental awareness							
	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
11. Someone who <i>does not</i> exercise	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
12. Someone who eats healthily	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
13. Someone who <i>does not</i> drink alcohol	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
14. Someone who takes part in a youth group	1	2	3	4	5	6	7
	<i>Not at all clear or vivid</i>				<i>Very clear or vivid</i>		
15. Someone who <i>does not</i> eat healthily	1	2	3	4	5	6	7

*Not at all clear or vivid*

*Very clear or vivid*

16. Someone who helps a family member with

housework/school work

1 2 3 4 5 6 7

*Not at all clear or vivid*

*Very clear or vivid*

17. Someone who works part-time

1 2 3 4 5 6 7

*Not at all clear or vivid*

*Very clear or vivid*

18. Someone who participates or gives to others

in some other way; (please list)

\_\_\_\_\_ 1 2 3 4 5 6 7

*Thank you for your time*

## Appendix E

### Questionnaire (Study 1B)

*When trying to describe someone, people generally use characteristics of that person. For example, if you describe someone your age that always gets good marks, you might say that person is smart, serious, and bookish.*

*We are interested in what you think of people your age who take part in help their parents with chores. In this case, we are interested in your impression of other people (positive and/or negative). We would like you to think about the typical person who help their parents with chores. When you think about this person, what is your impression of them? What images come to mind?*

*We would like to know more about your impression of this image.*

*Please think carefully about it. On the following pages, we will ask you to write a description of different characteristics of this image.*

**(1) What was the first thing that came to mind when you thought of this image?**

***Please try and give as much detail of the image as possible.***

***There is no right or wrong answers. It is your impression of the image that is important.***

(2) Describe the **appearance** of person you imagined

(3) Describe the **interests** of the person you imagined

(4) Describe the **values** of the person you imagined

(5) Describe the **attitude towards life** of the person you imagined

(6) Describe the **achievements** of the person you imagined

(7) Describe the **relationships** of the person you imagined

(8) Describe **anything else** that came to mind about the image.

*Thank you for your participation*

## Appendix F

### Questionnaire (Study 1C)

The following question is about your images of people. For example, we all have ideas about what typical movie stars are like or what the typical grandmother is like. We might think of the typical movie star as being "pretty" or "rich", and the typical grandmother as "sweet" and "frail". We are not saying that all movie stars or all grandmothers are exactly alike, but rather that many of them share certain characteristics.

- 1.** Think for a moment about the characteristics you think describes **someone your age who helps their parents with chores**; rate them on the following;

Characteristic		Not at All							Extre- mely
1	Smart	1	2	3	4	5	6	7	
2	Confused	1	2	3	4	5	6	7	
3	Popular	1	2	3	4	5	6	7	
4	Childish (immature)	1	2	3	4	5	6	7	
5	Cool	1	2	3	4	5	6	7	
6	Unattractive	1	2	3	4	5	6	7	
7	Independent	1	2	3	4	5	6	7	
8	Careless	1	2	3	4	5	6	7	
9	Self-Confident	1	2	3	4	5	6	7	
10	Dull (boring)	1	2	3	4	5	6	7	
11	Considerate (Kind)	1	2	3	4	5	6	7	
12	Self-Centred (selfish)	1	2	3	4	5	6	7	
13	Friendly	1	2	3	4	5	6	7	
14	Disrespectful	1	2	3	4	5	6	7	
15	Sporty	1	2	3	4	5	6	7	
16	Hardworking	1	2	3	4	5	6	7	

- 2.** Think for a moment about the characteristics you think describes **someone your age who takes part in a youth group**: rate them on the following;

Characteristic		Not at All						Extre- mely
1	Smart	1	2	3	4	5	6	7
2	Confused	1	2	3	4	5	6	7
3	Popular	1	2	3	4	5	6	7
4	Childish (immature)	1	2	3	4	5	6	7
5	Cool	1	2	3	4	5	6	7
6	Unattractive	1	2	3	4	5	6	7
7	Independent	1	2	3	4	5	6	7
8	Careless	1	2	3	4	5	6	7
9	Self-Confident	1	2	3	4	5	6	7
10	Dull (boring)	1	2	3	4	5	6	7
11	Considerate (Kind)	1	2	3	4	5	6	7
12	Self-Centred (selfish)	1	2	3	4	5	6	7
13	Friendly	1	2	3	4	5	6	7
14	Disrespectful	1	2	3	4	5	6	7
15	Sporty	1	2	3	4	5	6	7
16	Hardworking	1	2	3	4	5	6	7

- 3.** Indicate how favourable your impression is of the type of person your age who engages in the behaviours below on a 100-point scale;

(extremely Unfavourable)

( extremely Favourable).

Very favourable

**Example; Playing football**

1

-

100

90

Smoking

1

-

100

Drinking alcohol

1

-

100

Helping parents with chores

1

-

100

Taking part in a youth group

1

-

100

- 4.** In general, how **similar** are you to the type of person your age who does the following?

	<i>Not at all similar to me</i>			<i>Very similar to me</i>			
Smoking	1	2	3	4	5	6	7
Drinking alcohol	1	2	3	4	5	6	7
Helping parents with chores	1	2	3	4	5	6	7
Taking part in a youth group	1	2	3	4	5	6	7

- 5.** How **willing** would you be to do each of the following over the next two weeks?

	<i>Definitely <b>not</b> willing to do this</i>			<i>Definitely willing to do this</i>			
Smoking	1	2	3	4	5	6	7
Drinking alcohol	1	2	3	4	5	6	7
Helping parents with chores	1	2	3	4	5	6	7
Taking part in a youth group	1	2	3	4	5	6	7

***THANK YOU FOR TAKING PART!!***

Appendix G

School Letter of Invitation for Study 2



School of Psychology,  
Newcastle Rd,  
National University of Ireland,  
Galway.

Date

Dear Principal,

My name is Ronan Conway, a PhD candidate on the Child & Youth Research PhD Programme in the School of Psychology, NUI, Galway. I am part of a research team studying the development of self-regulation and positive qualities throughout adolescence, and would like to explore the possibility of your school becoming involved in the study.

In particular, we are interested in the development of self-regulation – how a young person negotiates the demands placed on them; peer-influence, and emotional-regulation; and how these changing aspects of development influence positive youth development.

As part of this research study, adolescents aged 12 – 18 years old (1<sup>st</sup> Year to 5<sup>th</sup> Year), are being recruited to participate in the first Wave of a longitudinal study, which aims to follow-up with participant's again 12-months later in order to assess developmental changes. Taking part involves completing a “paper and pencil” questionnaire. The entire process should take no more than 50 minutes.

Your school is one of a number of schools that have been selected to participate in this research throughout Ireland. Parental written consent and students'



assent will be sought prior to participation. All information will remain anonymous, as names and contact details are gathered but stored separately and only available to the research team. A summary of the findings of this study will be presented to all schools that take part following completion of the study.

When completed, it is hoped that this study will provide an important step in expanding the field of adolescent developmental psychology. The depiction of a holistic view of adolescent development is necessary in order to promote the skills and strengths of young people. In particular, it is envisaged that this study will inform Irish youth programmes in focusing on developmentally appropriate skills at key junctions of youth development in order to promote positive qualities.

In order to discuss this project further, I will contact you by telephone in a few days to arrange a meeting at your convenience. In the mean time, please find enclosed an information leaflet detailing the current study, sample consent forms, and a sample questionnaire. I am aware of the immense workload of a School Principal, therefore if you feel there is a teacher in your school who would like to facilitate this research project and have time to meet, please feel free to pass on all details of the study at your own discretion. If you would like further details about any aspect of the research please contact me by e-mail at [r.conway4@nuigalway.ie](mailto:r.conway4@nuigalway.ie), or alternatively you can call 087-2836539. Thank you for your time.

Yours sincerely,

Ronan Conway

B.A. (Hons) Psychology, MSc,

Child & Youth Research PhD (Candidate),

Government of Ireland Postgraduate Scholar,

National University of Ireland, Galway.

## Parental Letter of Information for Study 2



School of Psychology Research

### PARTICIPANT INFORMATION LEAFLET

#### Negotiating Life Demands & Decision-Making:

#### A Teenage View of Life

You are invited to take part in this 2-part research project on the development of decision-making and qualities in young people age 12-18 years old. Before you decide, it is important that you understand *why* the research is being done and *what* it will involve. This *Information Leaflet* will tell you about the aims, questions, risks and benefits of this research. If you agree to take part, we will ask you (*both participant AND Parent/Guardian*) to sign a **Consent Form**. All participants, who will be aged 12-18 years of age, will be required to get parental consent, which means a parent/guardian **MUST** also sign the consent form. If there is anything that you are not clear about, we will be happy to explain it to you. Please take as much time as you need to read this information. You should only consent to participate in this research study when you feel you fully understand what is being asked of you, and you have had enough time to think about your decision.

Thank you for reading this.

#### **WHO IS DOING THIS STUDY?**

- Researchers from the School of Psychology and the Child and Family Research Centre at the National University of Ireland, Galway.

#### **WHAT'S IT ALL ABOUT?**

#### **- YOU!**

- Understanding what makes young people grow into happy and healthy adults!
- We will examine young people's views on life and the development of young people's decision-making.
- This study will ask;
  - how young people direct their attention & plan their goals

- how young people view people their own age who engage in different types of behaviour
- how young people deal with different situations, and
- It will also ask about their views about life and attitudes toward health-related behaviours such as smoking.

It is hoped this study will improve our understanding of important aspects of teenager's lives so that policies and services for young people will be adapted for their specific needs.

### ***DO I HAVE TO TAKE PART?! - IT'S UP TO YOU!***

If you decide to take part you will be asked to sign a **Consent Form**;

- This includes consent for taking part in Part 1 of the study
- AND Part 2 12-months later.

If you change your mind **after** signing the consent form, you are still free to withdraw at **any time** and without giving a reason. There are two parts of the study, one this year, and one next year. You can decide to do one part, both parts, or neither. A decision to withdraw at any time, or a decision not to take part, will not affect your rights in any way.

### ***SO WHAT HAPPENS IF I AGREE TO TAKE PART??***

**FIRST:** We are sending this information leaflet to you to allow you some time to think about the study. If you are happy to participate, we would ask that **you AND your parent/guardian** sign the consent form and return it to the school as soon as possible.

**NEXT:** After returning the signed consent form

- You and other participants will be given a questionnaire to complete either in school or online.

**AFTER:** Part 2 of the study, if you want to take part, *will take place in 12-months time*. This is to allow the research team to measure changes that occur over one-year. This involves a questionnaire with similar questions and a computer-based game.

All information given is strictly confidential and only available to the research team. Names on all questionnaires will be blackened out with all questionnaires, consent forms, and contact details then stored separately, ensuring all information is stored anonymously.

All information is generally confidential and is only available to the research team. No-one outside the research team, including teachers, will see individual answers. All results published are from a group level. However, in the event that a young person

tells us something that indicates they are at risk, we may need to inform parents and/or a staff member in the school.

### ***HOW LONG WILL MY PART IN THE STUDY TAKE??!***

The research process is divided into two parts;

- The Part 1 questionnaire that will take about 40-50 minutes
- Part 2 12-months later, will take about the same time to complete. Any questions about the questionnaire can be directed to the researcher.

### ***WHAT'S THE UP-SIDE OF ALL THIS?***

Possible benefits of participating in the current research are that participants get an experience of what it's like to take part in psychological research, and in addition help develop a clear picture of adolescent life so that policies and services for young people will be adapted for their specific needs.

### ***ANY DOWN SIDE?***

Some of the questions deal with personal topics (for example, questions about the young person's health, views about the future, and attitudes toward health related behaviours, such as smoking). Although we would like everyone to answer all the questions, participants are free to skip any question that they do not wish to answer. All participants are entitled to change their mind about participating in this at any time without disadvantage or penalty.

### ***WHO DO I CONTACT FOR MORE INFORMATION??***

The researcher, Mr. Ronan Conway may be contacted at any time regarding questions about this study at [r.conway4@nuigalway.ie](mailto:r.conway4@nuigalway.ie) or by telephone at [091 495123](tel:091495123). The research supervisor, Dr. Caroline Heary, may also be contacted at [caroline.heary@nuigalway.ie](mailto:caroline.heary@nuigalway.ie), or through the School of Psychology at 091 493101. If you have any concerns about this study and wish to contact someone in confidence, you may contact: **The Head, School of Psychology, National University of Ireland, Galway at 091 493101.**

Appendix I

Participant Consent Form Study 2



School of Psychology

**PARTICIPANT CONSENT FORM**

**Participant Identification No.:** \_\_\_\_\_

*Life Demands & Decision-Making:*

*A Teenage View of Life*

Name of Researcher: Ronan Conway

Signature of Researcher

Please initial box

1. I confirm that I have read the information sheet for the above study and that I understand the information given. ☐
2. I am happy that I have had enough time to think about the information and have had the chance to ask the researcher questions. ☐
3. I understand that participation is voluntary and that it is possible to withdraw at any time, without giving any reason, without any legal rights being affected. ☐
4. I, the participant, agree to take part in part 1 and part 2 of this study. ☐

*(Remember, even though you agree to participate in both parts of the study, you may choose to withdraw at any time. You will be given opportunity to withdraw from the study prior to part 2).*

\_\_\_\_\_  
Name of Participant                      Date                      Signature

Parent/Guardian Signature - *By signing, the Parent/Guardian agrees that they have read and understand the information provided, and agree that the participant may take part in the above study:*\_\_\_\_\_

## Appendix J

## Parental Questionnaire (Study 2)

To avoid asking children about their own family backgrounds, we would be very grateful if you could fill in the details on your child's family. This information is **completely confidential** and will **only** be used to build an overall profile of the study population and their overall family contexts.

**Cultural Background**

1. Were you born in Ireland?

Yes ☐

No ☐

If No, please indicate what country you were born?  
\_\_\_\_\_

2. Please indicate your race/ethnicity;

White ☐

Mixed ☐

Asian ☐

Black ☐

Chinese ☐

Other: (please specify) \_\_\_\_\_ ☐

Prefer not to answer ☐

**Family Information**

3. What is the highest level of education the child's mother/guardian has completed to date?

Junior Certificate or less ☐

Leaving Certificate ☐

Subdegree (e.g. Diploma/Certificate, FETAC award) ☐

Primary Degree or Third Level ☐

Professional qualification ☐

Other not listed (please specify) \_\_\_\_\_ ☐

**4. How safe do you feel your child is travelling to facilities in your community?  
(Please circle)**

Unsafe					Very Safe
1	2	3	4	5	

**5. What kinds of facilities (*outside* school) are *available* to your child in the local area? (Please tick all that apply)**

Library ☐

Youth Cafe ☐

Internet access                      - at home ☐

- in the community ☐

Youth Groups/programmes (e.g. Foroige) ☐

Gym/Swim facilities ☐

Clubs

If yes, please specify;

Football ☐

Hurling ☐

Soccer ☐

Dance ☐

Theatre ☐

Martial Arts ☐

Other (specify): \_\_\_\_\_

**Please list any facilities not on the above list**

---



---

**6. How does your child travel to local facilities?**

Please Rank in order, 1 = most frequently used means, 5 = least frequently used means of transport

- |                                |                          |
|--------------------------------|--------------------------|
| Walking/cycling                | <input type="checkbox"/> |
| Lift with parent/family member | <input type="checkbox"/> |
| Lift with parent of friend     | <input type="checkbox"/> |
| Public Transport               | <input type="checkbox"/> |
| Other (please specify): _____  | <input type="checkbox"/> |

*Thank you for your time. Please return Questionnaire with Consent form to your School*



Appendix K

Individual Questionnaire (Study 2)



NUI Galway  
OÉ Gaillimh

# Seems Like Teen Spirit!



**Life Demands & Decision-Making**

I.D. NUMBER:

**A Teenage View of Life**

**Questionnaire Booklet**

NAME:

## Section

1. Date of Birth (Day/Month/Year): \_\_\_\_/\_\_\_\_/\_\_\_\_  
(Please ensure Parental/Guardian consent is included)
2. Gender (please circle): Male/Female
3. Year in School (please circle):  

1<sup>st</sup>

2<sup>nd</sup>

3<sup>rd</sup> (Junior Certificate)

4<sup>th</sup> (T.Y)

5<sup>th</sup>

6<sup>th</sup> (Leaving Certificate)

## Section

Below is a range of statement pairs showing different ways of thinking and acting when it comes to getting what you want.

Decide which of the statements is **most like** how **YOU** would behave (A or B).

There are **no** right or wrong answers. Answer all questions.

Circle your response for each (A or B)

Help: a “goal” is any aim in life you want to do

### STATEMENT A

### STATEMENT B

1. I concentrate all my energy on a few things	or	I divide my energy among many things
2. I take things as they come and carry on from there	or	I consider exactly what is important to me
3. I keep trying as many different possibilities as are needed to succeed at my goal.	or	When I do not succeed right away at what I want to do, I don't try other possibilities for very long
4. When something does not work out as well as before, I get advice from experts or read books	or	When something in my life isn't working as well as it used to, I decide what to do about it myself, without involving other people
5. For important things, I pay attention to whether I need to spend more time or effort at it	or	Even if something is important to me, it can happen that I don't spend enough time or effort at it

6. When I want to do something difficult, I wait for the right moment and the best opportunity.	or	When I want to do something, I take the first opportunity that comes
7. I don't think long about how to carry out my plans, I just try it	or	I think about exactly how I can best carry out my plans
8. I make every effort to reach a given goal	or	I prefer to wait for a while and see if things will work out by themselves
9. Even in difficult situations, I don't burden others	or	When things aren't going so well, I accept help from others
10. When I have started something that is important to me, but has little chance at success, I make more of an effort	or	When I start something that is important to me but has little chance at success, I usually stop trying
11. I am always working on several goals at once	or	I always focus on the one most important goal at a given time
12. When I think about what I want in life, I commit myself to one or two important goals	or	Even when I really consider what I want in life, I wait and see what happens instead of committing myself to just one or two particular goals
13. I can change a goal again at any time	or	When I decide upon a goal, I stick to it
14. When I want to get ahead, I also look at how others have done it	or	When I want to get ahead, only I myself know the best way to do it
15. When things don't work the way they used to, I look for other ways to do them	or	When things don't work the way they used to, I accept things the way they are
16. When I can't do something as well as I used to, then I ask someone else to do it for me	or	When I can't do something as well as I used to, I accept the change
17. When something doesn't work as well as usual, I look at how others do it	or	When something doesn't work as well as usual, I don't spend much time thinking about it
18. I always pursue many goals at once, so that I easily get bogged down	or	I always pursue goals one after the other
19. When I can't do something as well as I used to, I think about what exactly is important to me	or	When I can't do something as well as I used to, I wait and see what comes
20. Even if I can't do something as well as before, I pursue all my	or	If I can't do something as well as before, I concentrate only on

goals		essentials
21. When I can't carry on as I used to, I direct my attention to my most important goal first	or	When I can't carry on as I used to, I direct my attention, like usual, to all my goals
22. When things don't go so well, I leave it at that	or	When things don't work so well, I pursue my most important goal
23. When I am not able to get something I want anymore, I direct my efforts at what is <i>still</i> possible	or	When I am not able to get something I want anymore, I trust that the situation will improve by itself
24. When I can no longer do something in my usual way, I think about what, exactly, I am able to do under the circumstances	or	When I can no longer do something in my usual way, I don't think long about it

## Section 3

The following pairs of sentences are talking about two kinds of young people.  
For each of the following statements, decide which sort of person you are most like  
– the one described on the right, or the one described on the left. Then decide if  
that is “**sort of true**” or “**really true**” for you, and mark that choice.

For each statement, mark only **ONE** of the four choices. Answer all questions.

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me
1.	<input type="checkbox"/>	<input type="checkbox"/>	Some people go along with their friends just to keep their friends happy.	BUT	Other people refuse to go along with what their friends want to do, even though they know it will make their friends unhappy.	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	Some people think it's more important to be an individual than to fit in with the crowd.	BUT	Other people think it's more important to fit in with the crowd than to stand out as an	<input type="checkbox"/>	<input type="checkbox"/>

			individual.			
3.	<input type="checkbox"/>	<input type="checkbox"/>	For some people, it's pretty hard for their friends to get them to change their mind.	<b>BUT</b>	For other people, it's pretty easy for their friends to get them to change their mind.	<input type="checkbox"/> <input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	Some people would do something that they knew was wrong just to stay on their friend's good side.	<b>BUT</b>	Other people would not do something they knew was wrong just to stay on their friend's good side.	<input type="checkbox"/> <input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	Some people hide their true opinion from their friends if they think their friends will make fun of them because of it.	<b>BUT</b>	Other people will say their true opinion in front of their friends, even if they know their friends will make fun of them because of it.	<input type="checkbox"/> <input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	Some people will not break the law just because their friends say that they would.	<b>BUT</b>	Other people would break the law if their friends said that they would break it.	<input type="checkbox"/> <input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	Some people change the way they act so much when they are with their friends that they wonder who they "really are".	<b>BUT</b>	Other people act the same way when they are alone as they do when they are with their friends.	<input type="checkbox"/> <input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	Some people take more risks when they are with their friends than they do when they are alone.	<b>BUT</b>	Other people act just as risky when they are alone as when they are with their friends.	<input type="checkbox"/> <input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	Some people think it's better to be an individual even if people will be angry at you for going against the crowd.	<b>BUT</b>	Other people think it's better to go along with the crowd than to make people angry at you.	<input type="checkbox"/> <input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	Some people say things they don't really believe because they think it will make their friends respect them more.	<b>BUT</b>	Other people would not say things they didn't really believe just to get their friends to respect them more.	<input type="checkbox"/> <input type="checkbox"/>

## Section 4

The following pairs of sentences are talking about two kinds of young people.

*For each of the following statements, decide which sort of person you are most like – the one described on the right, or the one described on the left. Then decide if that is “**sort of true**” or “**really true**” for you, and mark that choice. For each statement, mark only **ONE** of the four choices.*

	Really True for Me	Sort of True for Me			Sort of True for Me	Really True for Me
1.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers feel that they are just as smart as others their age	<b>BUT</b>	Other teenagers aren't so sure and wonder if they are as smart.	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers find it hard to make friends.	<b>BUT</b>	For other teenagers it's pretty easy.	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers do very well at all kinds of sports.	<b>BUT</b>	Other teenagers don't feel that they are very good when it comes to sports.	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers usually do the right thing.	<b>BUT</b>	Other teenagers often don't do what they know is right.	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers are able to make really close friends.	<b>BUT</b>	Other teenagers find it hard to make really close friends.	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers are often disappointed with themselves.	<b>BUT</b>	Other teenagers are pretty pleased with themselves.	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers are pretty slow in finishing their school work.	<b>BUT</b>	Some teenagers can do their work more quickly.	<input type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers have a lot of friends.	<b>BUT</b>	Other teenagers don't have very many friends.	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers think they could do well at just about any new athletic activity.	<b>BUT</b>	Other teenagers are afraid they might not do well at a new	<input type="checkbox"/>

					athletic activity.		
10.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers often get in trouble for the things they do.	<b>BUT</b>	Other teenagers usually don't do things that get them in trouble.	<input type="checkbox"/>	<input type="checkbox"/>
11.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers do have a close friend they can share secrets with.	<b>BUT</b>	Other teenagers do not have a really close friend they can share secrets with.	<input type="checkbox"/>	<input type="checkbox"/>
12.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers don't like the way they are leading their life.	<b>BUT</b>	Other teenagers do like the way they are leading their life.	<input type="checkbox"/>	<input type="checkbox"/>
13.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers do very well at their class work.	<b>BUT</b>	Other teenagers don't do very well at their class work.	<input type="checkbox"/>	<input type="checkbox"/>
14.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers are very hard to like.	<b>BUT</b>	Other teenagers are really easy to like.	<input type="checkbox"/>	<input type="checkbox"/>
15.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers feel that they are better than others their age at sports.	<b>BUT</b>	Other teenagers don't feel they can play as well.	<input type="checkbox"/>	<input type="checkbox"/>
16.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers feel really good about the way they act.	<b>BUT</b>	Other teenagers don't feel that good about the way they often act.	<input type="checkbox"/>	<input type="checkbox"/>
17.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers wish they had a really close friend to share things with.	<b>BUT</b>	Other teenagers do have a close friend to share things with.	<input type="checkbox"/>	<input type="checkbox"/>
18.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers are happy with themselves most of the time.	<b>BUT</b>	Other teenagers are often not happy with themselves.	<input type="checkbox"/>	<input type="checkbox"/>
19.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers have trouble figuring out the answers in school.	<b>BUT</b>	Other teenagers almost always can figure out the answers.	<input type="checkbox"/>	<input type="checkbox"/>
	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me
20.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers are popular with others their age.	<b>BUT</b>	Other teenagers are not very popular.	<input type="checkbox"/>	<input type="checkbox"/>
21.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers don't do well at new outdoor games.	<b>BUT</b>	Other teenagers are good at new games right away.	<input type="checkbox"/>	<input type="checkbox"/>

22.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers do things they know they shouldn't.	<b>BUT</b>	Other teenagers hardly ever do things they know they shouldn't do.	<input type="checkbox"/>	<input type="checkbox"/>
23.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers find it hard to make friends they can really trust.	<b>BUT</b>	Other teenagers are able to make close friends they can really trust.	<input type="checkbox"/>	<input type="checkbox"/>
24.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers like the kind of person they are.	<b>BUT</b>	Other teenagers often wish they were someone else.	<input type="checkbox"/>	<input type="checkbox"/>
25.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers feel that they are pretty intelligent.	<b>BUT</b>	Other teenagers question if they are intelligent.	<input type="checkbox"/>	<input type="checkbox"/>
26.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers feel that they are socially accepted.	<b>BUT</b>	Other teenagers wished that more people their age accepted them.	<input type="checkbox"/>	<input type="checkbox"/>
27.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers do not feel that they are very athletic.	<b>BUT</b>	Other teenagers feel that they are very athletic.	<input type="checkbox"/>	<input type="checkbox"/>
28.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers usually act the way they know they are supposed to.	<b>BUT</b>	Other teenagers often don't act the way they are supposed to.	<input type="checkbox"/>	<input type="checkbox"/>
29.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers don't have a friend that is close enough to share really personal thoughts with.	<b>BUT</b>	Other teenagers do have a friend that they can share personal thoughts and feelings with.	<input type="checkbox"/>	<input type="checkbox"/>
30.	<input type="checkbox"/>	<input type="checkbox"/>	Some teenagers are very happy being the way they are.	<b>BUT</b>	Other teenagers wish they were different.	<input type="checkbox"/>	<input type="checkbox"/>

## Section 5

This section will ask you questions about your life, including friends, school and family. Please circle the answer that you feel is closest to you. Remember, there are no right or wrong answers, it is what YOU think that is important.

How much do you agree or disagree with the following?



		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1.	On the whole, I like myself.	0	1	2	3	4
2.	At times, I think that I am no good at all.	0	1	2	3	4
3.	All in all, I am glad I am me.	0	1	2	3	4
4.	I feel I do not have much to be proud of.	0	1	2	3	4
5.	Sometimes, I feel like my life has no purpose.	0	1	2	3	4
6.	When I am an adult, I'm sure I will have a good life.	0	1	2	3	4
7.	I get along with my parents.	0	1	2	3	4
8.	My parents give me help and support when I need it.	0	1	2	3	4
9.	My parents often tell me they love me.	0	1	2	3	4
10.	I have lots of good conversations with my parents.	0	1	2	3	4
11.	In my family, I feel useful and important.	0	1	2	3	4
12.	I care about the school I go to.	0	1	2	3	4
13.	My teachers really care about me.	0	1	2	3	4
14.	I get a lot of encouragement at my school.	0	1	2	3	4
15.	Students in my school care about me.	0	1	2	3	4
16.	In my school, there are clear cut rules for what students can and cannot do.	0	1	2	3	4
17.	Teachers at school push me to be the best I can be.	0	1	2	3	4
18.	I'm given lots of chances to make my town or village a better place to live	0	1	2	3	4
19.	In my neighbourhood, there are lots of people who care about me.	0	1	2	3	4
20.	Adults in my town or village make me feel important.	0	1	2	3	4

21.	Adults in my town or village listen to what I have to say.	0	1	2	3	4
22.	In my town or village, I feel like I matter to people.	0	1	2	3	4

**How true is each of these statements for you?**

		Never True	Seldom True	Sometimes True	Often True	Always True
23.	I trust my friends	0	1	2	3	4
24.	I feel my friends are good friends.	0	1	2	3	4
25.	My friends care about me.	0	1	2	3	4
26.	My friends are there when I need them.	0	1	2	3	4

**How well does each of these statements describe you?**

		Not at All Like Me	A Little Like Me	Somewhat Like Me	Quite Like Me	Very Much Like Me
27.	I don't feel sorry for other people when they are having problems.	0	1	2	3	4
28.	When I see someone being taken advantage of, I want to help them.	0	1	2	3	4
29.	It bothers me when bad things happen to <b>good</b> people.	0	1	2	3	4
30.	It bothers me when bad things happen to <b>any</b> people.	0	1	2	3	4
31.	When I see someone being treated unfairly, I don't feel sorry for them.	0	1	2	3	4
32.	I feel sorry for other people who don't have what I have.	0	1	2	3	4
33.	When I see someone being picked on, I feel sorry for them.	0	1	2	3	4
34.	It makes me sad to see a person who doesn't have friends.	0	1	2	3	4
35.	When I see another person who is hurt or upset, I feel sorry for them.	0	1	2	3	4

**How important is each of the following to you in your life?**

		Not Important	Somewhat Important	Not Sure	Quite Important	Extremely Important
<b>36.</b>	Getting to know people who are of a different race than I am.	0	1	2	3	4
<b>37.</b>	Helping other people.	0	1	2	3	4
<b>38.</b>	Helping to make the world a better place to live in.	0	1	2	3	4
<b>39.</b>	Giving time and money to make life better for other people.	0	1	2	3	4
<b>40.</b>	Helping to reduce hunger and poverty in the world.	0	1	2	3	4
<b>41.</b>	Helping to make sure all people are treated fairly.	0	1	2	3	4
<b>42.</b>	Speaking up for equality (Everyone should have the same rights and opportunities).	0	1	2	3	4
<b>43.</b>	Doing what I believe is right, even if my friends make fun of me.	0	1	2	3	4
<b>44.</b>	Standing up for what I believe, even when it's unpopular to do.	0	1	2	3	4
<b>45.</b>	Telling the truth, even when it's not easy.	0	1	2	3	4
<b>46.</b>	Accepting responsibility for my actions when I make a mistake or get in trouble.	0	1	2	3	4
<b>47.</b>	Doing my best, even when I have a job I don't like.	0	1	2	3	4

Think about the people who know you well (e.g. best friend, close family member). How do you think they would rate you on each of these?

		Not at All Like Me	A Little Like Me	Somewhat Like Me	Quite Like Me	Very Much Like Me
48.	Respecting the values and beliefs of people who are of a different race or culture than I am.	0	1	2	3	4
49.	Knowing a lot about people of other races.	0	1	2	3	4
50.	Enjoying being with people who are of a different race than I am.	0	1	2	3	4

		No	Probably Not	I'm Not Sure	Probably	Yes
51.	If you had an important concern about drugs, alcohol, sex, or some other serious issue, would you talk to your parent(s) about it?	0	1	2	3	4

**Rate yourself on the following...**

		N ever	A Little	So metimes	Quite a bit	Usually
52.	How often do you feel bored at school?	0	1	2	3	4

**53. What grades do you earn in school? (Please tick one)**

- ☐ Mostly below Ds (<50%)                      ☐ Mostly Ds (50-55%)  
☐ About half Cs and half Ds (45-55%)   ☐ Mostly Cs (50-60%)  
☐ About half Bs and half Cs (60-75%)   ☐ Mostly Bs (70-80%)  
☐ About half Bs and half As (75-90%)   ☐ Mostly As (>86%)

## Section ⑥

The next sections will ask you questions about your previous behaviour. Remember all information is confidential, so feel free to be as honest as possible.

1. During the last 12 months, how many times have you been leader in a group or organisation? (circle your answer)

Never                      Once                      2/3 times                      4 times                      Five or more times  
 1                              2                              3                              4                              5

2. Next, we would like to know how often you participate in the following activities. Please mark the answer that best describes your participation. If you never took part, please mark "Never".

	Never	Once a Month or less	A Couple of Times a Month	Once a Week	A few times a Week	Every Day
(a) Volunteering your time (e.g., at a hospital, day care centre, youth programme, community service, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(b) Mentoring/Peer advising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(c) Helping in Sports Activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(d) Participating in school government	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Think about your future. What are the chances for the following?

	Very Low	Low	About 50/50	High	Very High
1. Be involved in community service.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Be involved helping other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. How much do you agree or disagree with the following?

		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1.	I often think about doing things so that people in the future can have things better.	0	1	2	3	4
2.	It is important to me to contribute to my community and society.	0	1	2	3	4
3.	It's not really my problem if my neighbours are in trouble and need help.	0	1	2	3	4
4.	If I had to choose between helping to raise money for a neighbourhood project and enjoying my own free time, I'd keep my freedom.	0	1	2	3	4

5. How often do you do the following things?

	Never	Seldom	Sometimes	Often	Very Often
(a) Help a friend.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(b) Help a neighbour.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions ask about the main person who cares for you (e.g., your mother, father, guardian etc. Please replace the word “mother” as appropriate).

How much do you agree or disagree with these sentences?

		Strongly Disagree	Disagree	I'm in Between	Agree	Strongly Agree
1.	My mother doesn't really like me to tell her my troubles	0	1	2	3	4
2.	My mother hardly ever praises me for doing well	0	1	2	3	4
3.	I can count on my mother to help me out if I have a problem	0	1	2	3	4
4.	My mother spends time just talking to me.	0	1	2	3	4
5.	My mother and I do things that are fun together	0	1	2	3	4
6.	My mother tells me that her ideas are correct and that I shouldn't question them.	0	1	2	3	4
7.	My mother respects my privacy.	0	1	2	3	4
8.	My mother gives me a lot of freedom.	0	1	2	3	4
9.	My mother makes most of the decisions about what I can do.	0	1	2	3	4
10.	My mother believes I have a right to my own point of view.	0	1	2	3	4
11.	My mother really expects me to follow family rules.	0	1	2	3	4
12.	My mother really lets me get away with things.	0	1	2	3	4
13.	If I don't behave myself, my mother will punish me.	0	1	2	3	4
14.	My mother points out ways I could do better.	0	1	2	3	4
15.	When I do something wrong, my mother does not punish me.	0	1	2	3	4

## Section 7

This section includes questions about your past behaviour. If you feel uncomfortable answering any question, please skip that question and continue with the next. Feel free to contact the researcher at any time. Remember, all info is **completely confidential**.

**1. Within the last 12 MONTHS, how many times, if any, have you;**

Never   Once or   Rarely   Occasionally   Regularly

		twice			
Smoked cigarettes	1	2	3	4	5
Drank more than (4 for girls /6 for boys)					
alcoholic drinks in one night	1	2	3	4	5
Used illegal drugs	1	2	3	4	5
Used "legal" highs	1	2	3	4	5
Stolen something from					
a shop	1	2	3	4	5
Had unprotected sex	1	2	3	4	5
Been on detention at school	1	2	3	4	5
Been suspended from school	1	2	3	4	5

**2. During the last 12 MONTHS, how many times have you hit or beat up someone? (Please circle answer)**

Never   Once   Twice   3 or 4 times   5 or more times

1   2   3   4   5

**3. During the last 12 MONTHS, how many times have you taken part in a fight where a group of your friends were against another group?**

Never   Once   Twice   3 or 4 times   5 or more times

1   2   3   4   5

**4. During the last 12 MONTHS, how many times, if any, have you been arrested and/or been in trouble with the law? (Please circle answer)**

Never   Once   Twice   3 or 4 times   5 or more times

1   2   3   4   5

**5. What area do you live in? (please tick one)**



Urban (e.g. town)



Rural (e.g. countryside)



Please tick one of the boxes for each question		Yes	No
6.	Would you smile at people every time you meet them?	<input type="checkbox"/>	<input type="checkbox"/>
7.	Do you always practice what you preach to people?	<input type="checkbox"/>	<input type="checkbox"/>
8.	If you say to people that you will do something, do you always keep your promise, no matter how inconvenient it might be?	<input type="checkbox"/>	<input type="checkbox"/>
9.	Would you ever lie to people?	<input type="checkbox"/>	<input type="checkbox"/>

## Section 8

We all experience lots of different feelings or emotions. For example, different things in our lives make us feel happy, sad, angry and so on...

The following questions ask you to think about **how often** you do certain things **in response to your emotions**. You do not have to think about specific emotions but just how often you **generally** do the things listed below.

Please tick the box corresponding to the answer that fits best. We all respond to our emotions in different ways so there are no right or wrong answers.

In GENERAL how do you respond to your emotions?	Never	Seldom	Often	Very Often	Always
1. I talk to someone about how I feel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I take my feelings out on others verbally (e.g. shouting, arguing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I seek physical contact from friends or family (e.g. a hug, hold hands)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I review (rethink) my thoughts or beliefs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I harm or punish myself in some way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I do something energetic (e.g. play sport, go for a walk)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I dwell on my thoughts and feelings (e.g. It goes round and round in my head and I can't stop it)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I ask others for advice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In <b>GENERAL</b> how do you respond to your emotions?	Never	Seldom	Often	Very Often	Always
9. I review (rethink) my goals or plans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I take my feelings out on others physically (e.g. fighting, lashing out)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I put the situation into perspective	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I concentrate on a pleasant activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I try to make others feel bad (e.g. being rude, ignoring them)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I think about people better off and make myself feel worse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I keep the feeling locked up inside	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. I plan what I could do better next time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I bully other people (e.g. saying nasty things to them, hitting them)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I take my feelings out on objects around me (e.g. deliberately causing damage to my house, school or outdoor things)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Things feel unreal (e.g. I feel strange, things around me feel strange, I daydream)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I telephone friends or family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. I go out and do something nice (e.g. cinema, shopping, go for a meal, meet people)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Section 9

Below is a list of ways you might have felt or behaved. Please show HOW OFTEN you have felt this way during the PAST WEEK.

	During the Past Week:	Rarely or none of the time ( $<1$ day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1.	I was bothered by things that usually don't bother me.	0	1	2	3
2.	I did not feel like eating; my appetite was poor.	0	1	2	3
3.	I felt that I could not shake off the blues even with the help from my family or friends.	0	1	2	3
4.	I felt that I was just as good as other people.	0	1	2	3
5.	I had trouble keeping my mind on what I was doing.	0	1	2	3
6.	I felt depressed.	0	1	2	3

7.	I felt that everything I did was an effort.	0	1	2	3
8.	I felt hopeful about the future.	0	1	2	3
9.	I thought my life had been a failure.	0	1	2	3
10.	I felt fearful.	0	1	2	3
11.	My sleep was restless.	0	1	2	3
12.	I was happy.	0	1	2	3
13.	I talked less than usual.	0	1	2	3
14.	I felt lonely.	0	1	2	3
15.	People were unfriendly.	0	1	2	3
16.	I enjoyed life.	0	1	2	3
17.	I had crying spells.	0	1	2	3
18.	I felt sad.	0	1	2	3
19.	I felt that people dislike me.	0	1	2	3
20.	I could not get “going”.	0	1	2	3

## Section 10

Even though you may act differently depending on the situation, the purpose of these questions is to understand what you are usually like. Please read each sentence carefully and circle the number that is most true of you.

	Never <u>True</u>	Rarely <u>True</u>	Often <u>True</u>	Always <u>True</u>
1. I will keep working at difficult, boring tasks if I know they will help me get ahead later.	1	2	3	4

## Appendices

2. I live each day as if it's my last.	1	2	3	4
3. I think about how things might be in the future.	1	2	3	4
4. I tend to get caught up in the excitement of the moment.	1	2	3	4
5. I make lists of things to do.	1	2	3	4
6. Before making a decision, I weigh the good vs. the bad.	1	2	3	4
7. The future is very vague and uncertain to me.	1	2	3	4
8. I will give up my happiness now so that I can get what I want in the future.	1	2	3	4
9. I make decisions on the spur of the moment.	1	2	3	4
10. I would rather save my money for a rainy day than spend it now on something fun.	1	2	3	4
11. I can't really plan for the future because things change so much.	1	2	3	4
12. I always seem to be doing things at the last minute.	1	2	3	4
13. I don't plan, I take each day as it is.	1	2	3	4
14. I can see my life 10 years from now.	1	2	3	4
15. I usually think about the consequences before I do something.	1	2	3	4

Appendix L

Boys only table and graph of SEM model

*Boys only: Standardised and unstandardised regression weights (with standard errors) for the structural equation model of positive youth development, contribution, risky-behaviours and depression*

Pathway		$\beta$	B	SE	<i>p</i>
<b>Direct Effects on PYD</b>					
PYD <==	SOC	.29*	2.87	1.36	.035
	RPI	.31***	0.62	0.16	< .001
	FOI	.17*	0.40	0.19	.031
	Prototype	.49*	0.92	.37	.013
	IF	.16	0.11	1.70	.089
	EF	.33**	0.43	.12	.001
	ED	-.26**	-0.49	.15	.001
<b>Direct Effects on SOC</b>					
SOC <==	RPI	-.01	0.00	0.02	.982
	FOI	.14	0.03	0.02	.146
	Prototype	.12	0.02	0.02	.285
	IF	.09	0.01	0.01	.381
	EF	.30*	0.04	.02	.026
	ED	-.34**	-0.06	0.02	.002
<b>Direct Effects on Contribution</b>					
Contribution <==	SOC	-.01	-0.01	0.31	.968

RPI	.09	0.05	.04	.244
FOI	.34**	0.20	.06	.002
Prototype	.30*	0.14	.07	.036
IF	.38**	0.12	.04	.009
EF	.25*	0.08	.04	.019
ED	-.32**	-0.15	.05	.001
<b>Direct Effects on Risky-behaviours</b>				
Risky-behaviours <== SOC	-.13	-0.75	0.73	.301
RPI	.02	0.02	0.07	.758
FOI	-.12	-0.16	0.10	.131
Prototype	-.19	-0.21	.12	.097
IF	-.04	-0.03	0.05	.518
EF	.17	0.13	.08	.107
ED	.59***	0.63	0.12	< .001
<b>Direct Effects on Depression</b>				
Depression <== SOC	-.12	-0.45	.44	.300
RPI	-.16*	-0.13	.06	.029
FOI	.16	0.15	.08	.054
Prototype	.29	-0.22	.14	.108
IF	.11	0.05	.03	.118
EF	-.06	-0.03	0.05	.535

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	ED	.32**	0.23	.07	.001
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**$R^2$**

Positive Youth Development  $R^2 = .88$ , SE = .11,  $p < .001$ ;

Intentional Self-regulation  $R^2 = .34$ , SE = .09,  $p < .001$ ;

Contribution  $R^2 = .53$ , SE = .12,  $p < .001$ ;

Risky-behaviours  $R^2 = .50$ , SE = .09,  $p < .001$ ;

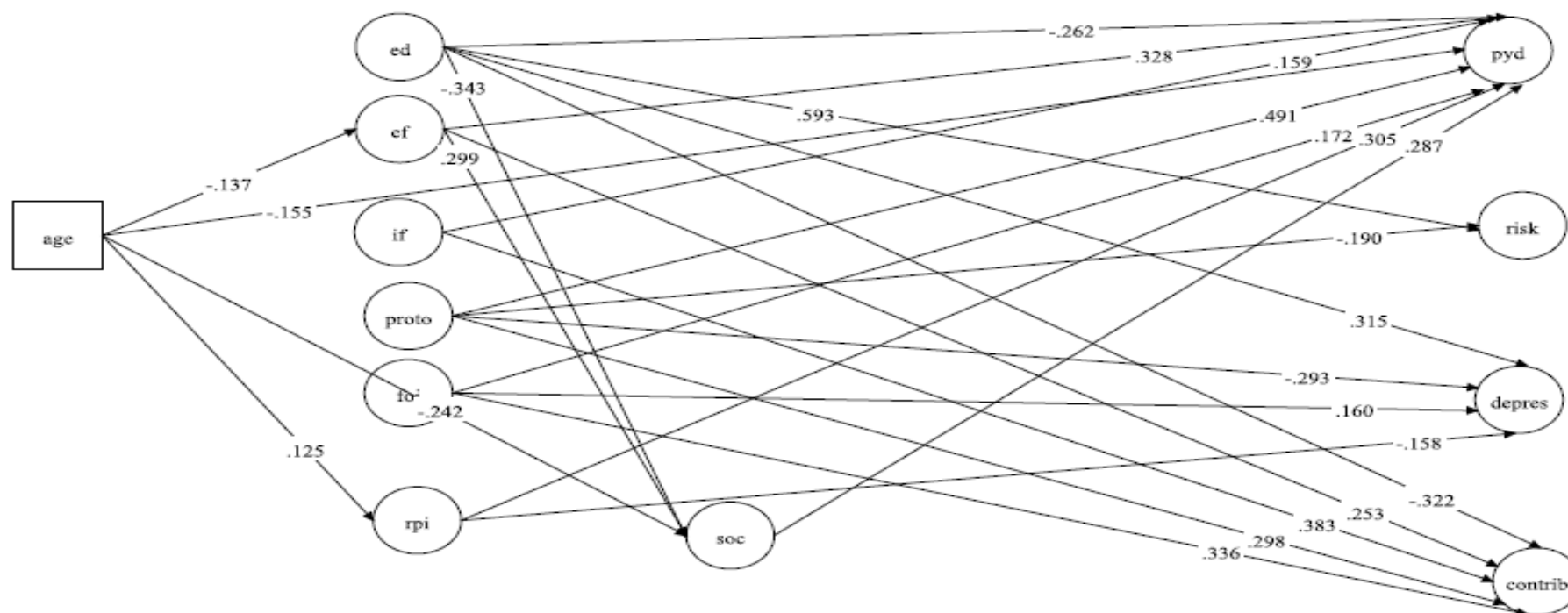
Depression  $R^2 = .30$ , SE = .08,  $p < .001$ .

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*Note.* PYD = Positive Youth Development; SOC = Self-regulation; RPI = Resistance to Peer Influence; FOI = Future Orientation Inventory; Proto = Prosocial Prototype; IF = Internal-functional emotion regulation; EF = External-functional emotion regulation; ED = External-dysfunctional emotion regulation. SE = standard error.

Statistical significance: \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .





Figure

*Significant Structural pathways for Boys for predictor variables on intentional self-regulation, PYD, risky-behaviours, depression and contribution.*

*Note.* Covariances and error terms are omitted for clarity.

Appendix M

Girls only table and graph of SEM model

*Girls only: Standardised and unstandardised regression weights (with standard errors) for the structural equation model of positive youth development, contribution, risky-behaviours and depression*

Pathway		$\beta$	B	SE	<i>p</i>
<b>Direct Effects on PYD</b>					
PYD <==	SOC	.45**	0.83	.27	.002
	RPI	.27**	0.32	.11	.005
	FOI	.23*	0.21	.09	.028
	Prototype	.49*	0.32	.15	.030
	IF	.02	0.01	.06	.853
	EF	.42**	0.27	.09	.002
	ED	-.31**	-0.26	.09	.004
<b>Direct Effects on SOC</b>					
SOC <==	RPI	.00	0.00	.05	.995
	FOI	.05	0.03	.05	.618
	Prototype	-.04	-0.01	.04	.703
	IF	.36	0.10	.05	.063
	EF	.02	0.01	.03	.846
	ED	-.10	-0.05	.04	.216
<b>Direct Effects on Contribution</b>					
Contribution <== SOC		.14	0.29	.20	.162

RPI	.12	0.16	.09	.090
FOI	.29**	0.29	.11	.005
Prototype	.41**	0.30	.10	.004
IF	.19	0.11	.08	.167
EF	.31**	0.22	.08	.003
ED	-.13	-0.12	.08	.109
<b>Direct Effects on Risky-behaviours</b>				
Risky-behaviours <== SOC	.06	0.19	.25	.445
RPI	-.06	-0.12	.11	.282
FOI	-.21*	-0.34	.14	.018
Prototype	-.23*	-0.27	.12	.028
IF	.02	0.02	.07	.823
EF	.13	0.14	.08	.077
ED	.67***	1.00	.13	< .001
<b>Direct Effects on Depression</b>				
Depression <== SOC	-.20*	-0.54	.24	.021
RPI	.11	-0.19	.12	.103
FOI	.03	0.03	.13	.792
Prototype	-.14	-0.13	.11	.247
IF	.15	0.11	.07	.089
EF	-.22*	-0.20	.08	.010

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	ED	.22*	0.26	.11	.017
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**$R^2$**

Positive Youth Development  $R^2 = .92$ , SE = .13,  $p < .001$ ;

Intentional Self-regulation  $R^2 = .20$ , SE = .09,  $p = .022$ ;

Contribution  $R^2 = .45$ , SE = .09,  $p < .001$ ;

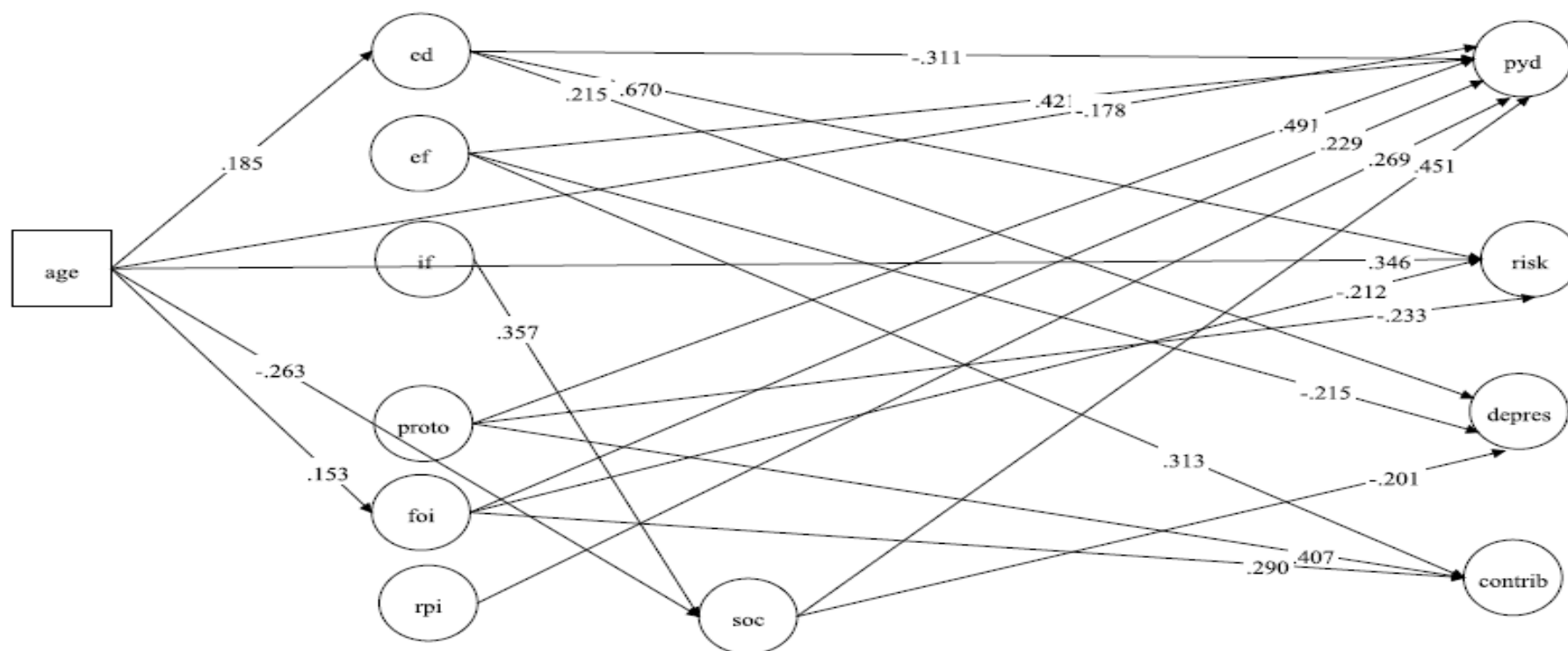
Risky-behaviours  $R^2 = .74$ , SE = .10,  $p < .001$ ;

Depression  $R^2 = .19$ , SE = .06,  $p = .001$ .

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*Note.* PYD = Positive Youth Development; SOC = Self-regulation; RPI = Resistance to Peer Influence; FOI = Future Orientation Inventory; Proto = Prosocial Prototype; IF = Internal-functional emotion regulation; EF = External-functional emotion regulation; ED = External-dysfunctional emotion regulation. SE = standard error.

Statistical significance: \*\*\* $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .



Figure

*Significant Structural pathways for Girls of predictor variables on intentional self-regulation, PYD, risky-behaviours, depression and contribution.*

*Note.* Covariances and error terms are omitted for clarity.

Appendix N

Younger adolescents only table and graph of SEM model

*Younger adolescents only: Standardised and unstandardised regression weights (with standard errors) for the structural equation model of positive youth development, contribution, risky-behaviours and depression for younger adolescents only*

Pathway		$\beta$	B	SE	<i>p</i>
<b>Direct Effects on PYD</b>					
PYD <==	SOC	.35***	1.70	.50	.001
	RPI	.32***	0.68	.16	< .001
	FOI	.09	0.14	.14	.303
	Prototype	.62***	1.09	.30	< .001
	IF	.14	0.15	.12	.188
	EF	.46***	0.57	.12	< .001
	ED	-.28***	-0.43	.11	< .001
<b>Direct Effects on SOC</b>					
SOC <==	RPI	.03	0.01	.03	.625
	FOI	-.07	-0.02	.03	.340
	Prototype	.03	0.01	.04	.816
	IF	.43***	0.10	.03	< .001
	EF	-.07	-0.02	.02	.455
	ED	-.16*	-0.05	.02	.034
<b>Direct Effects on Contribution</b>					

Contribution <== SOC	-.03	-0.05	.15	.729
RPI	.22**	0.18	.06	.002
FOI	.26*	0.15	.07	.038
Prototype	.27*	0.18	.07	.018
IF	.37**	0.16	.05	.002
EF	.23*	0.11	.04	.013
ED	-.20**	-0.12	.04	.003
<b>Direct Effects on Risky-behaviours</b>				
Risky-behaviours <== SOC	.06	0.17	.20	.399
RPI	-.02	-0.02	.07	.732
FOI	-.10	-0.09	.07	.193
Prototype	-.27**	-0.30	.11	.005
IF	.06	0.04	.05	.426
EF	.04	0.03	.05	.532
ED	.66***	0.63	.07	< .001
<b>Direct Effects on Depression</b>				
Depression <== SOC	-.13	-0.36	.23	.112
RPI	-.13*	-0.16	.08	.042
FOI	.12	0.11	.09	.214
Prototype	-.42**	-0.44	.15	.004
IF	.18*	0.12	.06	.039

EF	-.22**	-0.16	.06	.005
ED	.22**	0.19	.06	.001

$R^2$

Positive Youth Development  $R^2 = .93$ , SE = .11,  $p < .001$ ;

Intentional Self-regulation  $R^2 = .22$ , SE = .07,  $p = .002$ ;

Contribution  $R^2 = .51$ , SE = .10,  $p < .001$ ;

Risky-behaviours  $R^2 = .55$ , SE = .06,  $p < .001$ ;

Depression  $R^2 = .32$ , SE = .08,  $p < .001$ .

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*Note.* PYD = Positive Youth Development; SOC = Self-regulation; RPI = Resistance to Peer Influence; FOI = Future Orientation Inventory; Proto = Prosocial Prototype; IF = Internal-functional emotion regulation; EF = External-functional emotion regulation; ED = External-dysfunctional emotion regulation. SE = standard error.

Statistical significance: \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .





Appendix O

Older adolescents only table and graph of SEM model

*Standardised and unstandardised regression weights (with standard errors) for the structural equation model of positive youth development, contribution, risky-behaviours and depression for older adolescents only*

Pathway		$\beta$	B	SE	<i>p</i>
<b>Direct Effects on PYD</b>					
PYD <==	SOC	.27	1.81	1.26	.151
	RPI	.23**	0.49	0.17	.004
	FOI	.28*	0.47	.22	.035
	Prototype	.52**	0.77	.28	.005
	IF	.07*	0.31	.14	.023
	EF	.39**	0.40	.15	.006
	ED	-.28*	-0.59	.28	.034
<b>Direct Effects on SOC</b>					
SOC <==	RPI	.06	0.02	.03	.524
	FOI	.37*	0.09	.04	.010
	Prototype	.17	0.04	.03	.204
	IF	.03	0.02	.02	.272
	EF	.43**	0.06	.02	.005
	ED	-.41**	-0.13	.04	.003
<b>Direct Effects on Contribution</b>					

Contribution <== SOC	-.01	0.00	.39	.997
RPI	-.03	-0.02	.05	.667
FOI	.29*	0.19	.09	.028
Prototype	.41**	0.24	.09	.006
IF	.02	0.03	.04	.431
EF	.28*	0.11	.05	.023
ED	-.26*	-0.21	.10	.031
<b>Direct Effects on Risky-behaviours</b>				
Risky-behaviours <== SOC	-.11	-0.58	.95	.544
RPI	.00	0.00	.11	.971
FOI	-.11	-0.14	.15	.368
Prototype	-.25*	-0.28	.14	.047
IF	-.01	-0.03	.08	.699
EF	.23	0.18	.10	.080
ED	.59***	0.94	.25	< .001
<b>Direct Effects on Depression</b>				
Depression <== SOC	.34	-1.53	0.88	.080
RPI	-.09	-0.13	.10	.225
FOI	.19	0.20	.15	.163
Prototype	-.04	-0.04	.13	.754
IF	-.08*	-0.22	.09	.011

EF	.14	0.09	.09	.304
ED	.35*	0.48	.22	.028

$R^2$

Positive Youth Development  $R^2 = .89$ , SE = .13,  $p < .001$ ;

Intentional Self-regulation  $R^2 = .48$ , SE = .13,  $p < .001$ ;

Contribution  $R^2 = .47$ , SE = .12,  $p < .001$ ;

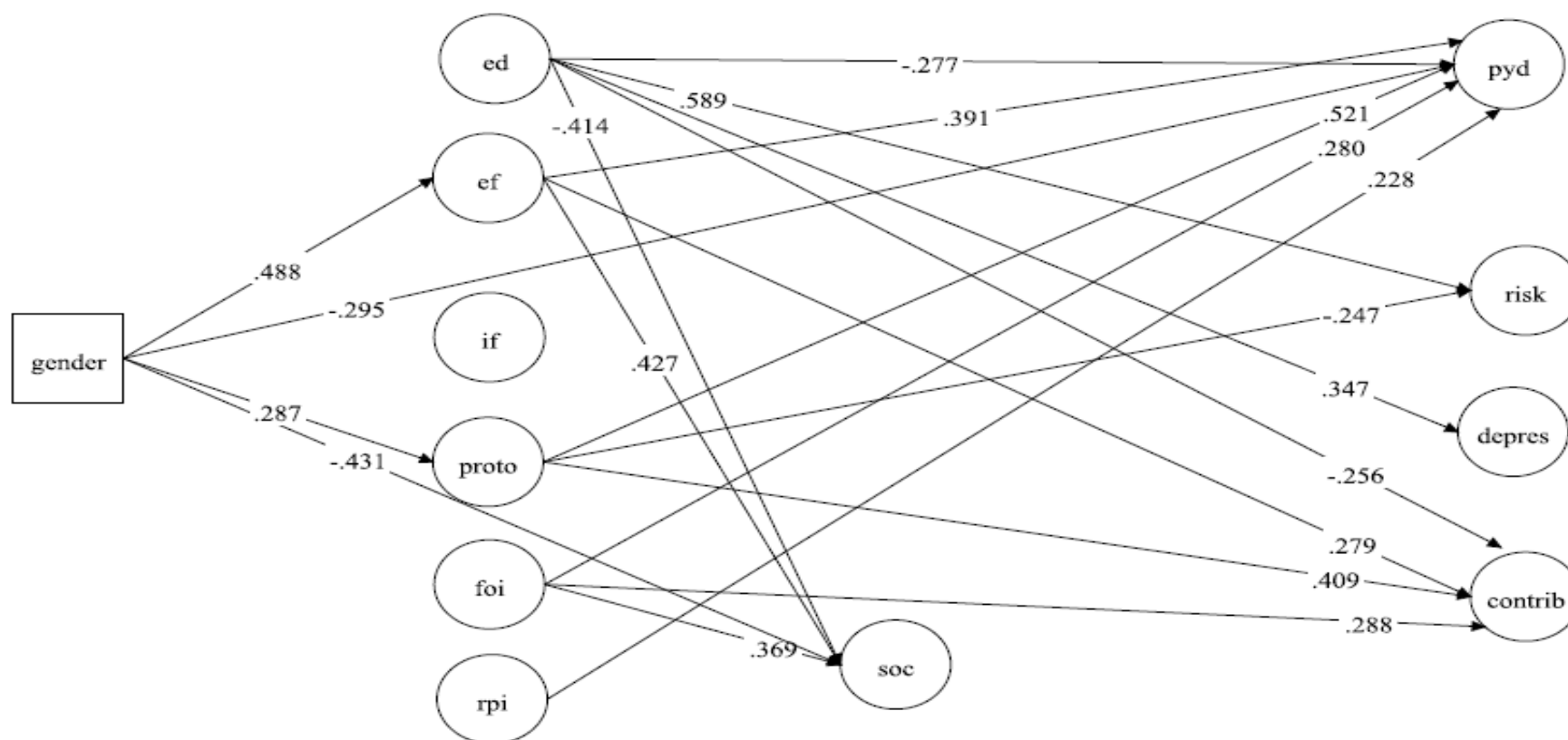
Risky-behaviours  $R^2 = .53$ , SE = .11,  $p < .001$ ;

Depression  $R^2 = .34$ , SE = .09,  $p < .001$ .

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*Note.* PYD = Positive Youth Development; SOC = Self-regulation; RPI = Resistance to Peer Influence; FOI = Future Orientation Inventory; Proto = Prosocial Prototype; IF = Internal-functional emotion regulation; EF = External-functional emotion regulation; ED = External-dysfunctional emotion regulation. SE = standard error.

Statistical significance: \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .



Figure

*Significant Structural pathways for older adolescents of predictor variables on intentional self-regulation, PYD, risky-behaviours, depression and contribution. Note. Covariances, observed variables, and error terms are omitted for clarity.*

Appendix P

*Summary of standardised regression weights for SEM pathways for overall sample, longitudinal sample, gender and age-specific models*

Path	Overall Sample		Gender		Age	
<b>1. Predicting PYD</b>	Overall Model	Outcomes 12-months later	Boys	Girls	Younger	Older
(a) SOC	.36***	ns	.29*	.45**	.35***	ns
(b) RPI	.17***	.30***	.31***	.27**	.32***	.23**
(c) FOI	ns	ns	.17*	.23*	ns	.28*
(d) Prototype	.45***	.54**	.49*	.49*	.62***	.52**
(e) IF	ns	.30**	ns	ns	ns	.07*
(f) EF	.24***	.26**	.33**	.42**	.46***	.39**
(g) ED	-.14*	-.20*	-.26**	-.31**	-.28***	-.28*
<b>2. Predicting SOC</b>						
(a) RPI	ns	ns	ns	ns	ns	ns

Path	Overall Sample		Gender		Age	
<b>2. Predicting SOC continued</b>	Overall Model	Outcomes 12-months later	Boys	Girls	Younger	Older
(b) FOI	ns	.30*	ns	ns	ns	.37*
(c) Prototype	ns	.30*	ns	ns	ns	ns
(d) IF	.40***	.29**	ns	ns	.43***	ns
(e) EF	ns	ns	.30*	ns	ns	.43**
(f) ED	-.25**	ns	-.34**	ns	-.16*	-.41**
<b>3. Predicting Contribution</b>						
(a) SOC	ns	ns	ns	ns	ns	ns
(b) RPI	ns	ns	ns	ns	.22**	ns
(c) FOI	.18*	.28*	.34**	.29**	.26*	.29*
(d) Prototype	.32**	.36*	.30*	.41**	.27*	.41**
(e) IF	Ns	.27**	.38**	ns	.37*	ns

Path	Overall Sample		Gender		Age	
3. Predicting Contribution continued	Overall Model	Outcomes 12-months later	Boys	Girls	Younger	Older
(f) EF	.18*	ns	.25*	.31**	.23*	.28*
(g) ED	-.16*	ns	-.32**	ns	-.20*	-.26*
4. Predicting Risk						
(a) SOC	ns	-.25*	ns	ns	ns	ns
(b) RPI	ns	ns	ns	ns	ns	ns
(c) FOI	-.16*	ns	ns	-.21*	ns	ns
(d) Prototype	-.24*	ns	ns	-.23*	-.27**	-.25*
(e) IF	ns	ns	ns	ns	ns	ns
(f) EF	ns	ns	ns	ns	ns	ns
(g) ED	.67***	.16*	.59***	.67***	.66***	.59***



Path	Overall Sample		Gender		Age	
5. Predicting Depression	Overall Model	Outcomes 12-months later	Boys	Girls	Younger	Older
(a) SOC	-.19**	ns	ns	-.20*	Ns	ns
(b) RPI	-.11*	ns	-.16*	ns	-.13*	ns
(c) FOI	ns	ns	ns	ns	Ns	ns
(d) Prototype	ns	ns	ns	ns	-.42**	ns
(e) IF	ns	ns	ns	ns	.18*	-.08*
(f) EF	ns	ns	ns	-.22*	-.22**	ns
(g) ED	.18*	.14*	.32**	.22*	.22**	.35*
<b>R<sup>2</sup> explained</b>						
PYD	.87	.66	.88	.92	.93	.89
Contribution	.55	.37	.53	.45	.51	.47
Risk	.59	.27	.50	.74	.55	.53

<b>R<sup>2</sup> explained</b>	Overall Model	Outcomes 12-months later	Boys	Girls	Younger	Older
Depression	.18	.09	.30	.19	.32	.34

Appendix Q

*National breakdown of number and percentage of students per year in Irish Post-Secondary schools*

<b>National</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>TY</b>	<b>5<sup>th</sup></b>	<b>6<sup>th</sup></b>	<b>% of</b>
<b>Sample</b>	<b>Year</b>	<b>year</b>	<b>Year</b>		<b>Year</b>	<b>Year</b>	<b>Overall</b>
<b>Total (N)</b>	60198	61046	59990	34721	57448	51415	324, 818
%	18.53	18.79	18.47	10.69	17.69	15.83	100
<b>Males (N)</b>	30678	31416	30571	16610	29132	26109	164, 516
%	18.65	19.10	18.58	10.10	17.70	15.87	50.65
<b>Females (N)</b>	29520	29630	29419	18111	28316	25306	160, 302
%	18.42	18.48	18.35	11.30	17.66	15.79	49.35

*Percentage and number of students per year in study samples by gender*

Study	1 <sup>st</sup> Year % (n)	2 <sup>nd</sup> Year % (n)	3 <sup>rd</sup> Year % (n)	TY % (n)	5 <sup>th</sup> Year % (n)	6 <sup>th</sup> Year % (n)	Overall % (n)
Study 1A – Male	46.60 (47)	14.90 (15)	25.70 (26)	3.00 (3)	5.00 (5)	5.00 (5)	84.20 (101)
Study 1A - Female	5.30 (1)	0.00 (0)	31.60 (6)	31.60 (6)	21.10 (4)	10.50 (2)	15.80 (19)
Study 1A - Total	40.00 (48)	12.50 (15)	26.70 (32)	7.50 (9)	7.50 (9)	5.80 (7)	100 (120)
Study 1B - Male	37.50 (9)	0.00 (0)	54.20 (13)	0.00 (0)	0.00 (0)	8.40 (2)	70.60 (24)
Study 1B - Female	80.00 (8)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	20.00 (2)	29.40 (10)
Study 1B - Total	50.00 (17)	0.00 (0)	38.20 (13)	0.00 (0)	0.00 (0)	11.70 (4)	100 (34)
Study 1C – Male	25.00 (26)	19.23 (20)	20.19 (21)	15.38 (16)	20.19 (21)	0.00 (0)	54.24 (104)
Study 1C - Female	18.18 (16)	19.32 (17)	19.32 (17)	14.77 (13)	28.41 (25)	0.00 (0)	45.76 (88)
Study 1C - Total	21.90 (42)	19.30 (37)	19.80 (38)	15.10 (29)	24.00 (46)	0.00 (0)	100 (192 <sup>a</sup> )
Study 2 - Male	21.40 (83)	17.10 (66)	10.60 (41)	17.60 (68)	33.30 (129)	0.00 (0)	57.70 (387)
Study 2 - Female	21.80 (63)	22.50 (64)	15.80 (45)	14.80 (42)	25.00 (71)	0.00 (0)	42.30 (285)
Study 2 - Total	21.70 (146)	19.30 (130)	12.80 (86)	16.40 (110)	27.40 (200)	0.00 (0)	100 (672)

*Note.* TY = Transition Year.

<sup>a</sup> = 16 participants did not report their gender in Study 1C.