Gelotophobia and high-functioning Autism Spectrum Disorder

Susan Grennan

Arlene Mannion

Geraldine Leader

National University of Ireland Galway

Corresponding author: Geraldine Leader, Ph.D., Irish Centre for Autism and Neurodevelopmental Research, School of Psychology, National University of Ireland, Galway, Ireland. Tel: 00353 91 493434, Fax: 00353 91 521355. Email: geraldine.leader@nuigalway.ie

Abstract

Gelotophobia can be defined as the fear of being laughed at or ridiculed. The aim of the current literature review is to present a synthesis of the literature on gelotophobia and the link between high-functioning autism spectrum disorder (hfASD) and gelotophobia. It will also give an overview of the literature regarding the variables hypothesised to be affected by the presence of gelotophobic symptoms in individuals with hfASD; namely social functioning, perceived social support and overall quality of life. Topics explored are defining the characteristics of gelotophobia, conceptualisation and measurement implications of gelotophobia, the etiology and consequences of gelotophobia, analysing the social competence of gelotophobes, and assessing the literature on the presence of gelotophobia in a hfASD sample. The characteristics of hfASD will be discussed. Research on hfASD and its relationship with other variables is also investigated, including comorbid psychopathology, perceived social support, social functioning, shame-bound emotions and overall quality of life. The current review will place an emphasis on research conducted on an adult population of individuals with hfASD. Given the limited research in the area, more research is needed to better understand the relationship between gelotophobia and bullying, social functioning, perceived social support, comorbid psychopathology and quality of life in individuals with hfASD. In conclusion, experts in the area of gelotophobia need to expand their research to include individuals with hfASD, and autism researchers need to be aware of gelotophobia and to incorporate gelotophobia as a potential comorbidity into their research.

Key words: Gelotophobia, High-functioning autism spectrum disorder, Fear of being laughed at, Teasing, Laughter

1. Gelotophobia

1.1. Definition

Gelotophobia can be defined as the fear of being laughed at or ridiculed (Ruch & Proyer, 2008a; Titze, 2009). Gelotophobia ranges from no fear to high fear. The main characteristic of gelotophobia is the misinterpretation of laughing or smiling of an interaction partner as a personally aversive, deprecatory, and denunciating act. In the place of what may have been intended as playful teasing or joking, the individual perceives the laughter and smiling of another as a personal vendetta aimed at putting them down (Ruch, 2009). Gelotophobia is not a pathology, but is experienced in the typically developing population also (Ruch, Hofmann, Platt, & Proyer, 2014). Gelotophobia is an inter-individual differences variable. It can be assessed in normal population and at its extreme end, it might lead to a pathological fear, but only in rare cases of extreme gelotophobia (Ruch & Proyer 2008a; 2008b). It has been suggested that this fear and shame-bound anxiety is a long-term consequence of intense, repeated and traumatic personal experiences of having been laughed at in the past, having been the target of mockery, and not being taken seriously by others (Titze, 1996).

Titze (2009) hypothesised that repeated traumatic experiences of ridicule may be a potential cause of gelotophobia. It is possible that individuals who have experienced negative life events such as ridicule may be unable to appreciate or recognise the possible benefits of humour. Alternatively, gelotophobes perceive smiling and laughter as disparaging acts of ridicule towards them (Ruch, Altfreder, & Proyer, 2009). This has been observed both in clinical practice (Titze, 2009) and in experimental settings for several different types of laughter and smiles (Ruch et al., 2009). In the paper by Ruch et al. (2009) only auditory stimuli were used, but a more recent

paper by Hofmann, Platt, Ruch, and Proyer (2015) also supported this claim by presenting different types of smiles and visually presenting laughs.

Studies conducted in the area have dealt with age-related vulnerabilities to gelotophobia (Platt, Ruch, & Proyer, 2010), personality dispositions and their relation to the fear of being laughed at (Ruch & Proyer, 2009), gelotophobia amongst psychiatric patients (Forabosco, Ruch, & Nucera, 2009), gelotophobia and self-estimated IQ (Proyer & Ruch, 2009), gelotophobia and life-satisfaction (Proyer, Ruch & Chen, 2012), early experiences of ridicule (Ruch, Proyer, & Ventis, 2010), and the impact of self-presentation styles and psychological gender on gelotophobia (Radomska & Tomczak, 2010). However, there has been limited research on gelotophobia in individuals with high-functioning autism spectrum disorder (hfASD). The research conducted by Samson, Huber, and Ruch (2011) was the first study to examine the concept of gelotophobia in relation to those with hfASD. It was reported that gelotophobia and its emergence from past experiences of having been laughed at was significantly higher in individuals with hfASD than in neurotypically developing controls. About 45% of the individuals with hfASD compared to only 6% of the controls had a form of gelotophobia, which is the highest percentage of the condition in a specific population ever found in the literature (Samson et al., 2011). This suggests that gelotophobia is an important area of investigation in individuals with hfASD.

1.2 Purpose of the Current Review

The purposes of the current review are to provide a synthesis of the Gelotophobia literature and to explain how Gelotophobia is a relevant research topic for researchers who are involved in research on hfASD. In the first section of this paper, Gelotophobia is introduced, including how Gelotophobia is conceptualised and measured. This is followed by the

characteristics of Gelotophobia, the etiology of Gelotophobia, its consequences, and a discussion of how individuals with Gelotophobia behave socially. In the second section of the paper, the limited research on Gelotophobia in hfASD is introduced, which provide an overview on what research has been conducted with the hfASD population. The third section of the paper introduces hfASD, including the characteristics of hfASD, the importance of studying Gelotophobia in hfASD, and the relationships between hfASD and other variables relevant to Gelotophobia. These variables include comorbid psychopathology in hfASD, quality of life in hfASD, social functioning in hfASD, perceived social support in hfASD, and shame-bound emotions in hfASD. The fourth section of the paper which focuses on establishing a link between past experiences of bullying, gelotophobia and hfASD. This is followed by a discussion of topics where future research needs to be conducted, and a conclusion determining the importance of this area of research.

1.3 Conceptualising and Measuring Gelotophobia

Laughter is a complex phenomenon where some negative connotations can find place. Recent research has indicated that indeed, in the essence of laughter there are active ingredients of aggressiveness and cruelty which can inflict severe emotional discomfort and pain on individuals, regardless of the intentional or unintentional nature of this pain (Forabosco et al., 2009). The term gelotophobia was coined in order to facilitate and address the empirical investigation of the negative long-term effects of ridicule; i.e. the development of the fear of being laughed at. ‘Gelos’ is the greek term for laughter whilst phobia is the term for fear (Ruch & Proyer, 2008a; Titze, 2009). The concept is receiving growing attention. It has been incorporated increasingly in many empirical studies of both clinical and non-clinical samples cross-culturally (Proyer et al., 2009). The phenomenon was originally derived from clinical case

studies and introduced as a clinical condition by Titze (1996; 2009). A relatively new ideology, gelotophobia is said to be akin to social phobia, found in clinical classification systems such as the DSM (Diagnostic and Statistical Manual of Mental Disorders) and the ICD (International Classification of Diseases). However, gelotophobia is not only a clinical condition, but can be experienced by individuals in the general population. Social phobia and gelotophobia have some relevant features in common such as social withdrawal and poorer social functioning due to a fear of humiliation, shame and embarrassment (Ruch & Proyer, 2008a). They also share some of the same criteria. In the DSM, Criterion B of social phobia for instance states that being exposed to the feared social situation almost invariably results in an immediate anxiety response (APA, 2000). This criterion is common to the fear of being laughed at.

Gelotophobia, however, is a specific variant of shame-bound anxiety which is derived from the person's conviction that he/she is intolerably ridiculous (Titze, 1996). It is this conviction of being ridiculous, strange, peculiar, etc. in the eyes of one's social partners and the subsequent expectation of being ridiculed that distinguishes gelotophobia from social phobia in its broad definition (Ruch & Proyer, 2008a). Whilst mostly prevalent in various clinical samples, a study by Ruch and Proyer (2008a) found that a considerable percentage of normal controls also exceeded the cut-off point for having a form of gelotophobia (e.g. 11.65% in Germany) thereby concluding that it is also a relevant phenomenon for non-clinical participants. It is hypothesised that there exists a spectrum ranging from no fear to high fear in gelotophobia, whereby those with fully-fledged symptomatology are at the high fear end of the dimension, thus meeting the criteria for having a fear of being laughed at (Ruch & Proyer, 2008a). This suggests that there are individual differences among participants with regard to the severity and influence of their gelotophobia symptoms rather than a normal versus gelotophobic dichotomy.

There are a number of ways of measuring gelotophobia. The Geloph questionnaire is a measure used to assess gelotophobia. The Geloph questionnaire, initially in its 46 items form, and then in the definitive 15 items form (the Geloph<15>) has demonstrated to be an efficient and reliable measurement instrument in the comprehensive analysis of the fear of being laughed at (Forabosco et al., 2009; Samson et al., 2011; Ruch & Proyer, 2008b; Ruch et al., 2009). Research conducted so far has indicated that the measure has sound psychometric properties (Forabosco et al., 2009). The 15-item scale, all positively keyed, describe the experiential world of gelotophobes; for example, 'When people laugh in my presence I get suspicious'. Answers are given on a four-point Likert-scale from one (strongly disagree) to 4 (strongly agree). The results obtained thereby allow one to establish the extent of the characteristics of the fear of being laughed at in a particular person. These can be used to specifically quantify the different degrees of gelotophobia individuals present with, ranging from non-existent to extreme (Ruch & Proyer, 2008a). Scores exceeding 2.50 are interpreted as indicating a slight expression of gelotophobia; those exceeding 3.00 indicate a marked expression of gelotophobia; whilst those of 3.50 and higher indicate an extreme expression of gelotophobia. The Geloph<15> has been translated into over 40 languages and previous research has demonstrated the scale to be a valid and reliable unidimensional instrument for the assessment of gelotophobia (Ruch & Proyer, 2008b).

The Picture-Geloph is a semi-projective tool that was piloted by Ruch et al. (2009). The tool involves 20 cartoons depicting social situations which involve laugher or potential laughter. Ruch, Platt, Bruntsch, and Ďurka (2017) examined the properties of the pilot version to develop a standardised version, the Picture-Geloph <9>. It correlated with the Geloph <15> and

successfully discriminated between non-fearful, slightly, marked, and extremely fearful individuals.

The PhoPhiKat (Ruch & Proyer, 2009) originally includes 45 items and includes the items from the Geloph. It also includes items that measure gelotophilia (i.e., the joy of being laughed at) and katagelasticism (i.e., the joy of laughing at others) (Ruch, Hofmann, Platt, & Proyer, 2014). A 30-item version was also developed. As well as the adult version of the scale, child versions of the questionnaire have been developed and have been used in previous research (Proyer, Neukom, Platt, & Ruch, 2012). Research is needed to determine the validity of these measures in individuals with hfASD. Whether items are interpreted the same way by individuals with hfASD as by individuals in the typically developing population, is a question for future research to determine.

1.4 Characteristics of Gelotophobia

Inevitably, it is innate in an individual to be irritated or emotionally derailed by someone laughing at them; and certainly to be afraid or paranoid that someone is laughing at them (Forabosco et al., 2009). Many people will experience sensitivity towards laughter and smiling throughout the course of their lives. There is a positive way of experiencing this being laughed at situation through means of social interplay. One may interpret the situation as a social game of teasing and joking amongst friends. Keltner, Capps, Kring, Young, and Heerey (2001) outlined that most scholars believe that teasing involves prosocial behavior, including humour and play. Keltner, Young, Heerey, Oemig, and Monarch (1998) discussed the differences between prosocial and antisocial teasing, and found that prosocial teasing was correlated to more positive responses in the target while antisocial teasing was correlated with more negative

responses in the target. Gelotophobic individuals, however, are unable to distinguish this positive experiencing or interpretation of the being laughed at situation from episodes of negative ridiculing and deprecation (Platt, 2008). Laughter and smiling are not perceived as signs of friendliness or expressions of mirth and positive affect for these individuals (Ruch et al., 2009). Alternatively, they experience all forms of laughter and smiling from their social partners as malicious and as a means to put them down. Playful teasing and intentional ridicule and scorning are thus interpreted through the same schematic representation; being the butt of criticism and derision (Platt, 2008). Gelotophobes indeed are irrationally and inconceivably preoccupied with the belief and the subsequent fear that they are being laughed at by others in all interactive domains (Ruch & Proyer, 2008b). Thus, whether the laughing situation is a playful scenario or under mean-spirited circumstances, the gelotophobic individual's emotional response pattern has been shown to consist primarily of shame, anger and fear, whereby even laughter of a pleasant nature is perceived uniformly as negative (Platt, 2008).

This feature of gelotophobia analysed by Platt (2008) is supported by Ruch et al. (2009). It was found that as opposed to the perception of a normal person, gelotophobic individuals were inclined to interpret as much as a friendly smile as offensive. Moreover, when asked to stipulate the nature of a laugh, those who scored highly on the gelotophobia scale failed to rate positively motivated laughter as pleasant, and listed negative attributes to this laughter more frequently than positive attributes. It was also the case whereby there was an increase in negative mood and a decrease in positive mood of these individuals following hearing laughing acts (Ruch et al., 2009).

Additional studies have reported that gelotophobes become very vigilant upon encountering episodes of laughter from others, in an almost paranoid tendency (Platt, 2008;

Titze, 1996). They become easily suspicious, as they are of the assumption that any ambiguous laughter is directed at them in a threatening, intimidating manner (Ruch, 2009). They are of the opinion that people they engage with are constantly screening them for potential evidence of ridiculousness and silliness which can provide for them a source of laughter at their involuntary expense (Titze, 2009). It is the gelotophobic individual's belief that all laughter is aimed at putting them down and making them feel they are a ridiculous object that others laugh at for an actual reason, regardless of whether a rational reason for this derision is existent or is a mere paranoia (Ruch & Proyer, 2008b). Thus, all sources of laughter (even innocent, non-directive sources) are systematically branded as being harmful mechanisms of ridicule and mockery (Titze, 2009).

Interestingly, gelotophobes also show physiological reactions towards laughter. Papousek et al. (2014) found that individuals with gelotophobia showed heart rate deceleration in response to laughter. When exposed to repeated insulting statements, individuals in the gelotophobic group responded with significant differences in heart rate acceleration than individuals without gelotophobia.

1.5 Etiology of Gelotophobia

Observations from experimental settings (Ruch et al., 2009), clinical practice, and single case studies (Titze, 1996) have indicated that the origins of gelotophobia stem from repeated traumatic experiences of being laughed at or ridiculed during childhood and adolescence, and/or traumatic experiences of being ridiculed in adulthood; such as through bullying and victimisation. It has been argued that positive laughter has a positive psychological effect on individuals (Samson & Gross, 2012). In Gelotophobia, however, the acquisition of the fear of

being laughed at could be considered a negative psychological consequence of the being laughed at situation – i.e. the converse side of humour (Platt, 2008). Gelotophobes will not have past experiences of humour, laughter or smiling as joyful or pleasant experiences (Titze, 1996). Rather, they will have memories of humour characterised by the pain of having been laughed at in the past. This pain is to a traumatising extent; such that it has indoctrinated in them the tendency to interpret virtually all smiling and laughter as mockery (Titze, 1996; 2009).

In the clinical setting, Titze (1996) observed that the shame experienced by all individuals who experienced gelotophobia was brought on by the conviction that they served as an object of mockery and derision that would elicit disparagement laughter in others as a result of prior exposure to disparagement. Hence, they were of the opinion that they were being ridiculed by their social partners in all interactions where humour presented itself. This finding was replicated in experimental settings (Samson et al., 2011). Those who scored highly on the gelotophobia scale in this study also recalled being laughed at in childhood more often and experienced these disparaging events more negatively. Another study indicated that the origins of gelotophobia were associated with shame-proneness (Proyer, Platt, & Ruch, 2010).

1.6 Consequences of Gelotophobia

In extreme cases, the consequences of gelotophobia include social withdrawal in order to remove oneself from any potential instances of being laughed at or ridiculed. Gelotophobic individuals ultimately suffer feelings of inferiority, self-contempt and other facets of shame (Proyer et al., 2010). It is reported that they are lacking in spontaneity, joy and a zest for life (Ruch & Proyer, 2008a). Humour and laughter are social experiences which uproot anxiety for them. They subsequently avoid social interplay as a means to compress and escape these feelings (Ruch et al., 2009).

In instances where laughter presents itself, gelotophobes tend to react 'agelotically,' in that their face will grow rigid and motionless, and their possible exhibition of a polite smile will freeze as they are unable to appreciate or understand the possible positive or non-threatening nature of the laugh or smile (Titze, 2009). They constantly send nonverbal cues that they feel uneasy. This defensive attitude is most conspicuous from their congealed, inanimate expression. Indeed, gelotophobes tend to experience difficulty in maintaining eye-contact, withhold an awkward posture and may demonstrate muscular tension and stiffness as a consequence of the emotional panic developed from the experience (Titze, 1996).

Gelotophobia is therefore typical of a social anxiety in that physiological symptoms may also arise, including a racing heartbeat, muscle twitches, blushing, trembling and speech impediments (Titze, 2009). Furthermore, gelotophobes tend to engage in increased self-observation and self-control as a means to avoid any performances which may have the potential to appear 'funny' in social interactions and make them vulnerable to ridicule (Titze, 1996). Their arms and legs may not move in a spontaneous way as they attempt to exert control over their spontaneous body movements. This core feature of gelotophobia; the 'wooden appearance' (Titze, 1996), otherwise known as 'Pinnochio – Syndrome' (Sellschopp-Rüppell & Von Rad, 1977) is suggested to be an integral criterion for assessment (Titze, 1996).

In a study by Proyer, Ruch, and Chen (2012), gelotophobia was examined in relation to concepts from positive psychology and happiness. It was found that the fear of being laughed at was negatively correlated to life satisfaction in Austria, Switzerland and China. Gelotophobes described themselves with lower affective and cognitive estimations of their overall lives (Proyer et al., 2012b). Those presenting with a high degree of gelotophobia also demonstrated negative indicators of a life of engagement (an orientation to happiness associated with flow experiences;

i.e. the tendency to become completely absorbed with what one is doing). Similar patterns were apparent across all samples (Proyer et al., 2012a). The cross-cultural aspect of this study thus suggests that this consequence of gelotophobia is prevalent across multiple populations despite cultural or societal differences.

1.7 Ridicule shapes behavior: How do gelotophobes behave socially?

According to Titze (1996), gelotophobes tend to expect rejection and ridicule in social situations. They have a deep conviction that they appear completely ridiculous in the eyes of their associates. They therefore attempt to actively avoid social activities, as it is their biased opinion that these circumstances invite disparagement (Titze, 2009). Their main priority is to shield themselves from any situations which may result in perceived discomfort and anxiety. It is this timidity and lack of social competence, however which ultimately opens them up to being the basis of subsequent mockery and derision (Titze, 1996; 2009). The shame-bound anxiety with which they contend and comply with thus maintains this vicious circle of perceived ridicule.

In the instance of attending social events, however, gelotophobes tend to actively screen their interaction partners to identify any possibilities of being laughed at (Ruch et al., 2009). This may consequent in a paranoid tendency and thus a high vigilance for any form of smiling or laughter; which are generally interpreted in a uniformly negative, denunciating manner (Platt, 2008). This can raise a number of false alarms whereby non-threatening laughter is misinterpreted for disparagement (Ruch et al., 2009). Gelotophobes are inclined to perceive themselves as being unconnected to others. They do not view laughter or smiling as a shared mechanism of social interplay. Rather, they perceive their interaction partners who engage with them through laughter or smiling as hostile, disparaging and antagonistic (Titze, 2009). Gelotophobes therefore react aversively to vocalisations constituting laughter or smiling by

expressing non-verbally that they feel uneasy and fear being humiliated, irrespective of their interaction partner's true intentions (Platt, 2008).

2. Gelotophobia in hfASD

The first study to investigate the prevalence of gelotophobia in a hfASD sample was by Samson et al. (2011). A between-subjects design was conducted using 40 individuals with hfASD and 83 neurotypically developing controls. The distribution of males and females did not differ significantly between the two groups. Both groups were also similar regarding age (control group: $M = 31.78$, $SD = 11.68$; hfASD group $M = 28.72$, $SD = 9.34$). Through use of standardised instruments, it was found that this study supported Asperger's (1944) reports that individuals with hfASD have less humour and are ridiculed more often than controls. Only 6% of the controls exceeded the cut off point for having a slight form of gelotophobia in comparison to 45% of the hfASD group, which was statistically significant (Samson et al., 2011). Moreover, even among the controls (who were measured on the Autism-Spectrum Quotient), gelotophobia was positively associated with autism-spectrum level (AQ-k score), thereby reinforcing the hypothesis that gelotophobia and hfASD are closely related. Similar rates have been reported in other clinical populations; although not as high as that of the hfASD group. Previous research found that 40% of individuals with eating disorders exceeded the threshold for a slight form of gelotophobia; 35.7% of individuals with personality disorders (Forabosco et al., 2009), and 24.5% of shame-bound neurotics (Ruch & Proyer, 2008b). This high prevalence rate amongst the hfASD group in comparison to controls and other samples suggests that gelotophobia is an important but understudied phenomenon in those with hfASD.

3. High-functioning ASD (hfASD)

3.1. Characteristics of hfASD

Asperger Syndrome was originally defined by Hans Asperger as autistic psychopathy (Frith, 1991). It has since been largely defined and classified under the DSM-IV as a pervasive developmental disorder illuminated by autistic social deficits and restricted, stereotypical patterns of behavior. These occur in the absence of clinically significant language impairments or cognitive deficits (APA, 1994). In 2013, however, the DSM-5 was introduced whereby Asperger Syndrome was subsumed under the umbrella term ASD, which is now used to categorise all discrete autistic disorders previously classified separately under the DSM-IV (Woods, Mahdavi, & Ryan, 2013). The DSM-5 now divides clinical aspects into a dyad of impairments: (1) persistent deficits in social and communication issues and (2) restricted, repetitive behavior, and/or fixated interests and activities (Tanguay, 2011). Individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder (American Psychiatric Association, 2013). Therefore, the DSM-5 modifications will only affect newly diagnosed individuals. All individuals with a current diagnosis of Asperger Syndrome will not lose their Asperger Syndrome diagnosis as a result of the administrative changes. They will retain their diagnosis as under previous diagnostic criteria. The term hfASD will be used throughout this paper.

3.2 Importance of studying Gelotophobia in hfASD

Symptomatically, individuals with hfASD demonstrate the core characteristics of autism in the presence of normal to high verbal intelligence (Frith, 2004). Thus, despite their conventional vocabularies, they can show marked deficiencies in social communication, social cognition and experience difficulties with empathy. This is a result of their reduced theory of

mind capacity which hinders their ability to distinguish between one's own mental state and that of others (Woods et al., 2013).

Emotionality is also an issue. Emotionality can include the expression of emotions, understanding of the emotions of others, and emotion regulation (Woods et al., 2013). Whilst those with hfASD may not have diminished emotionality, they can have greater difficulty understanding and compartmentalising their own emotions and indeed conveying these to others (Woods et al., 2013). Individuals with hfASD may have difficulties understanding social situations and the emotions of others in those situations. Alexitymania, which is the inability to express emotions has been identified as being an issue in individuals with hfASD (Fitzgerald & Bellgrove, 2006). A relationship has been demonstrated in the literature between gelotophobia and alexitymania (Boda-Ujlaki & Séra, 2013). Costa, Steffgen, and Samson (2017) investigated the role that alexitymania plays with expressive incoherence in children with ASD compared to typically developing children. It is found that children with ASD presented with more expressive incoherence in relation to negative behavior, where they displayed more neutral or positive emotions than typically developing children. Yet, little is known about the potential relationship between gelotophobia and alexitymania in individuals with hfASD. Future research is needed to empirically explore these concepts in individuals with hfASD.

It is important to remember that gelotophobes are not anhedonic. Positive emotions are experienced by gelotophobes, but only emotions that are not typically associated with laughter. Ruch, Hofmann, and Platt (2015) investigated the differences in verbal and facial expressions between 20 gelotophobes and 20 non-gelotophobes towards videos of people recalling positive emotions. The research found that gelotophobes displayed less joyful smiles and more expressions of contempt than non-gelotophobes to laugher-eliciting emotions. Similar findings

have been demonstrated on the appreciation of humour in individuals with hfASD. Weiss et al. (2013) compared whether children with hfASD could appreciate slapstick comedy in comparison to children who were typically developing. While children with hfASD could appreciate the material, they had greater difficulties in discriminating humous from non-humous material.

Furthermore, they may demonstrate difficulty in understanding non-verbal cues, reciprocal interaction, and initiating appropriate non-verbal communication (Frith, 2004; Wing, 1981). This therefore leads to social awkwardness and a deficiency in social skills which may prevent individuals with hfASD from forming meaningful friendships and interacting appropriately with others.

3.3 Relationships between hfASD and other variables relevant to Gelotophobia

3.3.1 Comorbid psychopathology in hfASD. Gelotophobia has been associated with co-occurring mental disorders (Weiss et al., 2012). Weiss et al. (2012) reported that 80% of individuals in the gelotophobic group had a co-occurring diagnosis of social phobia and/or Cluster A personality disorder. Carretero-Dios, Ruch, Agudelo, Platt, and Proyer (2010) investigated the relationship between gelotophobia and social phobia. It was found that Social Anxiety and Distress and Fear of Negative Evaluation scale overlapped with gelotophobia, yet gelotophobia cannot be fully accounted for by these scales.

Similarly, in individuals with hfASD, there is developing evidence that individuals are at a high risk of associated psychiatric disorders, with depression and anxiety being the most common psychiatric comorbidities in this population (Ghaziuddin, 2002; Skokauskas & Gallagher, 2010; Wing, 1981). Much of this research however has been conducted on children and adolescents rather than adult populations (Simonoff et al., 2008). Moreover, very few

investigations of clinically relevant, systematically explained psychiatric comorbidities in adults with hfASD have been carried out. The research conducted by Lugnegard, Hallerbäck, and Gillberg (2011) investigated comorbid psychopathology in individuals with clinically diagnosed hfASD. By using Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), Lugnegard et al. (2011) assessed psychiatric axis-I-comorbidity in fifty-four adult individuals, both men and women. It was found that 70% of individuals had experienced at least one episode of major depression, and 50% had recurrent major depressions. It was found that 56% of participants met the criteria for having at least one anxiety disorder.

Whilst specific to a hfASD population, numerous other studies have found similar results to that of Lugnegard et al. (2011). Hofrander et al. (2009) analysed the frequency of comorbid psychiatric disorders among three groups: individuals with autistic disorder; individuals with hfASD, and individuals with pervasive developmental disorder not otherwise specified (PDD-NOS). It was found that the most prevalent comorbid condition was mood disorder (53%) which was closely followed by anxiety disorder, whereby 50% had a diagnosis. One third of participants had been treated with an antidepressant on at least one occasion in their lives (Hofrander et al., 2009). Analogous to these findings, Green, Gilchrist, Burton, and Cox (2000) compared 20 adolescents with hfASD to 20 adolescents with conduct disorder. This sample was chosen as a control group for the hfASD group as social difficulties common to hfASD may also be exhibited in conduct disorder. The authors identified high levels of anxiety and obsessional disorders in the adolescents with hfASD, whilst depression, suicidal ideation and temper tantrums were common to both groups (Green et al., 2000). Munesue et al. (2008) reported similar findings, whereby 36% of their ASD sample had a mood disorder as a comorbid condition. It was found that 75% of these individuals had a diagnosis of hfASD. Using a

psychiatric history interview similar to the SCID-I, Sterling et al. (2008) also found depressive symptoms in 40% of their clinically referred group of 46 cases with hfASD.

3.3.2 Quality of life in hfASD. QoL in relation to individuals with hfASD is a concept which has received scant attention over the past three decades (Renty & Roeyers, 2006). Irrespective of improvements in precise diagnoses and the proliferation of interventions at increasingly earlier ages, QoL research for people with hfASD is lacking (Burgess & Gutstein, 2007). Renty and Roeyers (2006) examined QoL in the first empirical investigation of outcome and predictors of outcome in 58 male adults with hfASD.

Impairments in social functioning are commonly found in individuals with hfASD. As a result, research examining exemplary indicators of specific dimensional facets such as interpersonal relations (e.g. friendships, interactions, supports, family, affection and intimacy) (Schalock, 2000) may be more indicative of QoL in an hfASD population in comparison to other populations. Many individuals with hfASD are reliant on the support of their families and/or society and continue to be highly dependent on them throughout their lifetime (Engström, Ekström, & Emilsson, 2003). Renty and Roeyers (2006) also reported that rates of gainful employment were lower than would be expected for neurotypically developing adults, with approximately half of the participants with hfASD being employed. This is similar to previous findings which report that employment rates are disappointing for individuals with hfASD (Engström et al., 2003; Howlin & Goode, 1998). Mawhood and Howlin (1999) found that of those with hfASD who were employed, their jobs were low in status and/or ended prematurely, often due to social incompetence. It is suggested that this failure to make appropriate use of their training and skills or find/maintain a suitable job position may result in frustration, a loss of self-

esteem, and in some cases bouts of anxiety, depression or other psychological disturbances (Howlin, 2005).

Similar research regarding the QoL of 12 males with hfASD aged 18-20 was carried out by Jennes-Coussens, Magill-Evans, and Koning (2006), which used both quantitative and qualitative methods to analyse the concept. A control group of 13 neurotypically developing males was used in this between-groups design study. The WHOQOL–Brief Version was used to assess QoL. The Perceived Support Network Inventory (PSNI; Orritt, Paul, & Berhman, 1985) was used to measure network characteristics, perceptions concerning social support and support seeking activities. A semi structured interview was used to explore independence, friendship and dating relationships, and leisure activities. The findings of this study indicated that participants with hfASD rated their QoL as lower than that of the neurotypically developing controls. Furthermore, similar to the Renty and Roeyers study (2006), only half of the participants with hfASD were in employment compared to most of the controls. Moreover, the jobs of the men with hfASD who were in employment were professions which had fewer social demands and lower income. There was no significant difference regarding perceived social support scores between the two groups. Nonetheless those in the hfASD group had lower and more variable scores. The young men with hfASD also reported a significantly different social and physical QoL. It was evident that these individuals were aware of their impairments in social competency, and subsequently perceived an impact on their overall QoL (Jennes-Coussens et al., 2006).

With regards to relationships with significant others, Jennes-Coussens et al. (2006) reported that a lack of necessary skills was the most common reason these young men gave for not dating (only half of the young men had dating experience); which is comparable to the

findings of other studies (Nordin & Gillberg, 1998). Jennes-Coussens et al. (2006) also reported that in comparison to no individuals in the control group; four men with hfASD indicated that they would not be inclined to live independently from the family home as they perceived the tasks involved as unmanageable (i.e. cooking, laundry, management of personal finances etc.). Furthermore, those with hfASD reported being less satisfied with their physical health than the neurotypically developing controls. These results may relate to deficits in motor skills and clumsiness, which are common in individuals with hfASD (APA, 1994). The implications of these deficits are significant. Clumsiness limits participation in games during school years, exacerbating social deficits, and interferes with school activities such as handwriting, arts, and some labour type jobs such as an assembly worker; which would be hindered by coordination impairments (Jennes-Coussens et al., 2006). It was also reported by Jennes-Coussens et al. (2006) that some individuals with hfASD refused to learn to drive, as they perceived their 'clumsiness' as an obstacle to their performance. Although there was a small sample size in this study conducted by Jennes-Coussens et al. (2006), the researchers have made succinct the impact of hfASD in adulthood on QoL outcomes such as social functioning, employment and activities of daily living. This area of research is in need of further empirical investigation.

Little is known about how quality of life may be affected by gelotophobia in individuals with hfASD. If individuals with hfASD have gelotophobia, they may be more likely to socially isolate themselves and avoid situations in which they may fear people will laugh at them. This may have an impact in the learning of new skills such as in vocational programmes. Research is needed to determine the role gelotophobia plays in the quality of life of an individual with hfASD.

3.3.4 Social Functioning in hfASD. Deficits in social communication are one of the core deficits in individuals with hfASD. Little is known about how deficits in social communication affect gelotophobia. It can be hypothesised that individuals with hfASD who have greater social communication deficits may experience high levels of fear while it can be hypothesised that individuals with hfASD with less social communication deficits may experience no gelotophobia. However, these are merely hypotheses and need to be investigated through empirical studies.

3.3.5 Perceived Social Support in hfASD. The literature on social support emphasises the discrimination between perceived and received informal support. Whilst perceived social support can be defined as one's perception that one's social network is available to provide support and aid if needed, received social support is conceptualised as the actual transfer of advice, aid and affect through one's interpersonal networks (Norris & Kaniasty, 1996). Research suggests that perceived informal social support is positively correlated with quality of life and wellbeing among adults and adolescents with hfASD (Renty & Roeyers, 2006). This is similar to further literature on social support in other populations, which suggests that personal well-being is more strongly linked to the perception that informal support is available to oneself, if required, than the effects of actual supportive behaviors (Kessler & McLeod, 1985). It was found that the discrepancy between needed and received formal support was strongly associated with quality of life in a hfASD sample regarding accommodation, interpersonal relationships, daytime activities and ASD-specific information (Renty & Roeyers, 2006).

Similar to the possible link between gelotophobia and quality of life in individuals with hfASD, perceived social support may be affected by gelotophobia in indiviuals with ASD. It is possible that those who are gelotophobes may avoid social interactions as a way to decrease

anxiety. It is also possible that those with lower perceived social support may be exhibiting more gelotophobia as perceived social support may work as a buffer in supporting individuals with hfASD. However, there is little empirical investigation of the relationship between gelotophobia and perceived social support in an hfASD sample and thus this area is subsequently in need of further attention.

3.3.6 Shame-bound emotions in hfASD. Gelotophobia has been identified as being a variant of shame-bound anxiety. Heerey, Keltner, and Capps (2003) compared children with hfASD to typically developing children in terms of theory of mind and the recognition of self-conscious emotion. Children with hfASD performed more poorly in identifying self-conscious emotions, such as shame or embarrassment, than typically developing children. Therefore, it could be hypothesised that individuals with hfASD experience gelotophobia due to experiencing anxiety. It could also be hypothesised that where an individual with hfASD has difficulty in understanding the self-conscious emotions of themselves and others, there may be an exacerbation of gelotophobia.

4. Establishing the Link Between Past Experiences of Bullying, Gelotophobia, and hfASD

Those with hfASD inevitably stand out due to their inappropriate or unconventional reactions and behaviors in social settings, particularly in childhood (Samson et al., 2011). Many individuals with hfASD find it difficult to establish and maintain reciprocal relationships with others (Gilchrist et al., 2001; Green et al., 2000). Social and communicative impairments commonly found in these individuals often consequent in lower levels of social functioning than would be expected given their linguistic and cognitive abilities (Renty & Roeyers, 2006). It is unsurprising, therefore, that evidence has been found of individuals with hfASD reporting that

they experience a higher level of bullying and derision in comparison to neurotypically developing controls. Hans Asperger has identified abundant cases of those with hfASD who have been laughed at and ridiculed during childhood as a result of their perceived peculiarities (Frith, 1991). This finding is supported by Little (2002), who found that children with hfASD were four times more likely to experience bullying than their typically developing peers. This may be a consequence of the fact that their behavior is seen as incongruent to normal behavior due to their unnatural use of language and inability to understand fun (Frith, 1991).

Deviant behavior and incongruity to normal activity indeed are core elements of humour and ridicule for others (Ferguson & Ford, 2008). The perceived abnormalities and social deficiencies of individuals with hfASD make them more susceptible to forms of mockery and derision. It has been reported that individuals with hfASD are more often teased and scorned by others due to their social naivety and behavior that comes across as awkward and aloof to other children. This ultimately compounds their isolation and makes them more prone to teasing and rejection by their peers (Carrington & Graham, 2001; Rowley et al., 2012). They may also experience difficulty correctly interpreting non-verbal cues and non-literal speech such as irony and sarcasm (Asperger, 1944; Happé, 1995), which may be important in distinguishing teasing from mean-spirited scenarios. Rieffe, Camodeca, Pouw, Lange, and Stockmann (2012) found that anger was associated with victimisation in young adults with ASD.

Developing the conditioned fear of being laughed at; gelotophobia, is for these reasons suggested to be of a greater prevalence in individuals with hfASD than in neurotypically developing controls (Samson et al., 2011). The acquisition of gelotophobia serves as a long-lasting consequence of repeated and traumatic experiences of being laughed at throughout one's lifetime and is hypothesised to affect social competency and functioning (Titze 2009).

5. Future Research

The research conducted by Samson et al. (2011) was the first study to apply gelotophobia to a population of those with hfASD. The presence of gelotophobia was found to be statistically significant, thereby suggesting that it is an important area of investigation in an hfASD sample. However, whilst the prevalence has been determined, the effects of this phobia on individuals with hfASD is an area which has not yet been comprehensively investigated. Future research needs to examine gelotophobia in relation to levels of social functioning, perceived social support and the overall quality of life of individuals with hfASD, as it is hypothesised that gelotophobia will have an impact upon these variables. Much research to date on various facets of hfASD has focused on a population of adolescents. Future research should focus on including adult hfASD samples.

Samson et al. (2011) commented on the need for examining as to whether other phobias or psychiatric conditions were comorbid with the presence of gelotophobia in individuals with hfASD, as comorbid psychopathology was not investigated in their study. Comorbid psychiatric conditions are common in individuals with hfASD (Lugnegard et al., 2011). It may be possible that those with hfASD have higher fear levels in general. Future research needs to identify whether a positive correlation exists between gelotophobia and psychological conditions in individuals with hfASD. This information is important for the future development and provision of adequate interventions and support plans for those with hfASD that are in accordance with the expressed needs of the individuals themselves.

6. Conclusion

In their review, Ruch et al. (2014) provided a revised model of putative causes, moderating factors and consequences of gelotophobia. This model has the potential to be applied to individuals with hfASD who are gelotophobic. Research is needed to incorporate hfASD symptoms into this model, in order to determine how these symptoms could fit into being potential moderating factors in gelotophobia for individuals with hfASD. This model also needs to be investigated in individuals with hfASD in order to determine whether the potential causes, moderating factors and consequences are relevant in the population of individuals with hfASD who are gelotophobic.

In conclusion, gelotophobia is an area where much more research needs to be conducted in the future. We need to better understand the relationship between gelotophobia and bullying, social functioning, perceived social support, comorbid psychopathology and quality of life. For those with hfASD who experience gelotophobia, we need to understand how this affects their lives and overall outcome. Experts in the area of gelotophobia need to expand their research to include hfASD, and autism researchers need to be aware of gelotophobia and to incorporate gelotophobia as a potential comorbidity into their research. By doing so, similarities and differences between gelotophobia and hfASD can be explored and better understood. This has implications for social skills interventions, job-skills and employment programmes, and vocational programmes for individuals with hfASD. Gelotophobia is a new and developing area of autism research where it is expected that much more research will be conducted in the coming years.

Compliance with Ethical Standards

Disclosure of potential conflicts of interest:

The authors declare that they have no conflict of interest.

Research involving Human Participants and/or Animals:

This article does not contain any studies with human participants or animals performed by any of the authors.

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