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Daring, Substance Use and Involvement in Violence Among School Children: Exploring a Path Model

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ABSTRACT. This study explores whether the association between substance use and involvement in youth violence is a unique association resulting from the properties of the drugs, or whether it is part of a larger behavioral cluster. The sample was composed of 1,571 10th grade students from the Israeli secular and religious state school systems, including both Jewish and Arab schools. The results indicate that the strongest predictor for unplanned violent activities such as physical fights is alcohol use, suggesting that this chemical substance may lower the threshold of unplanned violence. However, daring was found to be the strongest predictor for planned violent activities such as bullying and weapon carrying, suggesting that the behavioral pattern is the most influential. Thus future research and intervention programs would perhaps benefit from differentiating between planned and unplanned violence. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website:*

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KEYWORDS. Adolescents, substance use, daring, violence

In recent years the problem of youth violence has attracted a great deal of attention. School violence, including physical fighting, bullying and weapon carrying, has become a serious public health concern (CDC, 2001).

Physical fighting is one of the most common violent acts among adolescents (Currie, Roberts, Morgan, Smith, Setterobulter, Samdal et al., 2004). In several representative American samples, as high as forty percent of the adolescents reported involvement in a fight in the year prior to the survey (Forrest, Zychowski, Stuhldreher & Ryan, 2000; Markowitz, 2001). A similarly high percentage was found among Israeli youth (Harel, Ellenbogen-Frankvits, Molcho, Abu-Asban & Habib, 2002; Benbenishty, Zeira & Astor, 2000). In a cross-national study that was administered in 35 countries and regions in the Americas and Europe, the average fighting rate for 15-year-old students ranged from 20% in Portugal up to 48% in Lithuania, and placed Israel in the 30th place (Craig & Harel, 2004).

Physical fights are a risk factor as regards injury, and this risk is compounded by weapon carrying (Malek et al., 1998). In a representative Israeli sample, 21.8% of the boys reported they needed medical care after involvement in a fight (Harel et al., 2002). Moreover, students who reported having been in a serious fight are four times more likely to carry a weapon to school, compared with youth who were not involved in a serious fight (Forrest et al., 2000).

Data from the US National Longitudinal Survey of Adolescent Health (Add Health) found that more than 10 percent of the students interviewed reported having carried a weapon such as a gun, knife or club to school during the month prior to the survey (Forrest et al., 2000). In Israel 15% of the adolescents sampled reported weapon carrying for self-defense at least once during the previous month (Harel et al., 2002) and between 10% and 13% of high school students said they carried a weapon inside the school (Harel et al., 2002; Benbenishty et al., 2000).

Along with physical fights and weapon carrying, bullying is another common form of youth violence. Bullying is defined as repeated exposure to negative actions from one or more students (Olweus, 1993).

Bullying implies that there is an imbalance of power (physically, psychologically or otherwise) between the bully and the victim (Olweus, 1991). Olweus reported that in Norway, one out of seven students was either a bully or a victim or both (Olweus, 1993). Bullying rates among 15-year-olds (assessed as participating in bullying three or more times in the previous month) were found to differ widely across geographical areas, with a 3% rate in Wales and a 41% rate in Lithuania (Craig & Harel, 2004). In Israel, 17.4% of the students reported they had bullied other students three times or more during the school year. This places Israel in the 12th place out of 35 countries and regions in the Americas and Europe (Harel et al., 2002).

Alcohol and other drugs play a prominent role in interpersonal youth violence (Zahang & Johnson, 2005; Markowitz, 2001; Forrest et al., 2000). Alcohol and drug use are highly correlated with increased violent behavior (e.g., Salts & Lindholm, 1995), whereas reduction in alcohol and drug consumption was found to be associated with a decline in violent and delinquent behaviors (Markowitz, 2001; Van Kammen & Loeber, 1994).

Kaplan (Kaplan, Toller & Yoshida, 2001) claims that although many studies have investigated the connection between substance use and aggression, it is still one of the least understood associations in behavioral science. Several theories have been put forward to account for this connection. One frequent explanation is that the pharmacological properties of drugs are a key factor in the ensuing violent behavior. More specifically, chemical substances may affect the human brain and change the user's reaction toward disturbing events, either by reducing inhibitions involving personal and social control (Wurmser & Lebling, 1983) or by impairing cognitive functions (Fagan, 1990; Reiss & Roth, 1993). As a result, the individual's reactions may become more aggressive, violent or antisocial. This type of pharmacological effect has been found in several studies, especially regarding cocaine and alcohol (e.g., Phil & Peterson, 1993; Gustafson, 1993).

Another well-known explanation for the association between drug use and violent behavior is related to the process of obtaining drugs. Obtaining illicit drugs frequently requires involvement in felonies or socializing with criminal elements. This illegal activity increases the probability of engaging in other delinquent and violent behaviors (Lowry, Sleet, Duncan, Powell & Kolbe 1995; Goldstein, 1985). Among junior high school students, gun carrying was strongly linked with indicators of serious delinquency and drug selling (Callahan & Rivara, 1992; Webster, Gainer & Champion, 1993). In this sense, the

criminological explanation is more likely to view the relationship between illicit drugs and violence as a byproduct of the social properties of the illicit drug distribution system rather than arising from the pharmacological properties of the drug itself. It thus accounts more cogently for the connection between illicit drugs and violence, but not for the connection between alcohol and violence.

The pharmacological as well as the criminological explanations see the relationship between substance use and violence as an exclusive association resulting from pharmacological or social characteristics that are unique to drug consumption. An alternative approach can be found in Jessor's "Problem Behavior Theory" (Jessor, 1991; Jessor, Donovan & Costa, 1991). According to Jessor, the tendency in adolescents to be involved in deviant behavior stems from personality and environmental factors as well as from involvement in other deviant behaviors. The fact that a vulnerable adolescent is involved in substance abuse or violence is due to both role modeling to which the teenager is exposed and to personal circumstances. However, involvement in one deviant behavior is more likely to increase the probability of involvement in other problem behaviors, since different risk behaviors are part of the same behavioral cluster. According to this approach, the connection between drug use and violence stems from the fact that they are both part of the same cluster of behaviors. This connection is not unique and can be shown to exist between any two different risk activities.

Support for the problem behavior approach comes from results showing that social and behavioral variables that were found to be linked to the violence and alcohol consumption cluster (for meta-analysis see, Bushman & Cooper, 1990) have also been linked to other risk behaviors, including daring (e.g., Walker, Chaney & Mason, 2001; Pearson & Michell, 2000; Santor, Messervey & Kusumakar, 2000). This suggests that daring, as well as violence and drug use, may stem from the same social and behavioral variables.

In Israel, school violence has only emerged recently as a focal point of determinants research, as a result of public pressure (Harel, 1999). Therefore, there are only a handful of studies which have explored the etiology of youth violence in Israeli schools. Therefore, the current study has two major aims. The first is to explore determinants of youth violence in Israel. The second aim is to examine which of the three theoretical explanations (the pharmacological, the criminal or the behavioral) best fits the data. Thus, the following hypotheses will be investigated:

1. *The pharmacological hypothesis.* The association between drug use, alcohol consumption and violence should be stronger than the association between daring and violence, since the pharmacological properties of the drugs are the main explanation for escalating violence.
2. *The criminal hypothesis.* The association between drug use and violence should be stronger than the association between alcohol use and daring with violence, since involvement with criminal elements to obtain illicit drugs is the main factor responsible for involvement in violence.
3. *The behavioral hypothesis.* Daring should be a significant predictor of youth violence, on the same level as drug and alcohol use, since involvement in deviant behavior encourages youth to be involved in other risk-taking behaviors, and not the nature of any of the deviant behaviors in themselves.

METHODS

Subjects

The study is based on data from the 1998 Israeli Health Behaviors in School Aged Children (WHO-HBSC) survey. The Israeli HBSC was conducted on a nationally representative sample of 8,394 6th through 10th grade students in the secular and religious state school systems, including both Jewish and Arab schools. The current study used a subsample of 1,571 students who were in 10th grade at the time. A full description of the development and assessment of the 1998 HBSC questionnaire appears in the international survey protocol (WHO, 1997). The main topics addressed in the survey include social-demographic background, general health and well-being, family and peer relationships, school perceptions, exercise and leisure-time activities, eating habits, substance use and sexual behavior. Because the drug use items were only asked of 10th grade students, the current study only includes this age group.

Measures

Bullying. The term “bullying” was explained to the students in the following way:

Here are some questions about bullying. We say a student is BEING BULLIED when another student, or a group of students, do nasty and unpleasant things to him or her. It is also bullying when a student is teased repeatedly in a way he or she doesn't like. But it is NOT BULLYING when two students of about the same strength quarrel or fight.

The bullying measure used is a combination of two questions: "How often have you taken part in bullying other students *in school* this term?" and "How often have you taken part in bullying other students *on the way to or from school* this term?" on a scale that ranged from 0 (never) to 8 (many times on both measures).

Physical fighting. Involvement in physical fights was measured by combining two questions: "During the past 12 months, how many times were you involved in a physical fight?" and "During the past 12 months, how many times were you involved in a physical fight in which you were injured and needed medical treatment?" The two measures were assessed on a scale that ranged from 0 (never on both measures) to 20 (4 times or more on both measures).

Weapon carrying. Weapon carrying was measured by one item: "During the past 30 days, on how many days did you carry a weapon, such as a knife, club, or gun, for self-defense?" in which 0 indicates never and 1 indicates once or more.

Sociodemographic. Two demographic factors were included: gender (47.6% boys, 52.4% girls) and ethnicity (62.6% Jews, 37.4% non-Jews, including Moslems, Druze and Christian Arabs).

Drug use. Drug use was assessed by the mean score of six questions measuring the frequency of drug use, including cannabis, heroin, cocaine, LSD, ecstasy and methadone during the past twelve months. The scale ranged from 0 (never) to 4 (25 times or more).

Alcohol consumption. Alcohol consumption was measured by the mean score of two questions: "During the past 30 days, how many days did you drink five drinks (of alcohol) or more within a few hours?" and "Did you ever drink alcohol so much that you got drunk?" Scale ranged from 0 (never) to 4 (many times).

Daring behavior. Daring was measured by the mean score of two questions: "During the past 12 months, how many times did you do something dangerous or forbidden just to prove to your friends that you could do it?" and "During the past 12 months, how many times did you do something dangerous or forbidden just to see what it feels like?" Scale ranged from 0 (never) to 3 (many times).

Procedure

The questionnaire was group-administered to students in one 45-minute homeroom class by a research assistant.

RESULTS

Out of all the 10th grade students in the sample, 35.2% reported being involved in a physical fight at least once during the previous 12 months, 15.0% reported carrying a weapon at least once during the previous 30 days, 36.8% reported being involved in bullying someone else during the previous term, 9.7% had used drugs at least once during the previous 12 months, 27.3% had engaged in problem drinking behavior at least once during the previous 30 days, and 39.5% had done dangerous or forbidden things at least once during the previous 12 months.

A series of t-tests were conducted in order to examine gender and ethnicity differences. Results show that boys were found to be more involved than girls in violent activities and risk-taking behaviors and that Arab youth were more involved in violence, and less involved in alcohol consumption, than Jewish youth. No differences between groups were found for daring or for drug use. (see Table 1).

Before exploration of the path model, the correlations between the risk variables were examined. The zero order correlation suggested strong correlations among all three risk-taking activities ($r = 0.37$, $P < 0.001$ between daring and alcohol consumption; $r = 0.32$, $P < 0.001$ between drug use and drinking; and $r = 0.23$, $P < 0.001$ between drug use and daring).

The zero order correlations between each of the three risk activities and each of the three youth violence dimensions were also high, especially for weapon carrying. Daring had the highest association with weapon carrying ($r = 0.39$, $p < 0.001$), followed by bullying ($r = 0.34$, $p < 0.001$) and physical fighting ($r = 0.30$, $p < 0.001$). The association between alcohol and weapon carrying was also the highest ($r = 0.39$, $p < 0.001$), followed by bullying and fighting ($r = 0.30$, $p < 0.001$). Drug use had the highest association with weapon carrying ($r = 0.28$, $p < 0.001$), followed by bullying ($r = 0.26$, $p < 0.001$) and physical fighting ($r = 0.21$, $p < 0.001$).

In order to examine which theoretical explanation could best explain the associations between risk activities and youth violence (hypotheses 1-3), three-path models were conducted for each of the three violent activities.

TABLE 1. Mean Scores, Standard Deviation and t-test Scores on Violence and Risk-Taking Activities for Gender and Ethnicity Groups

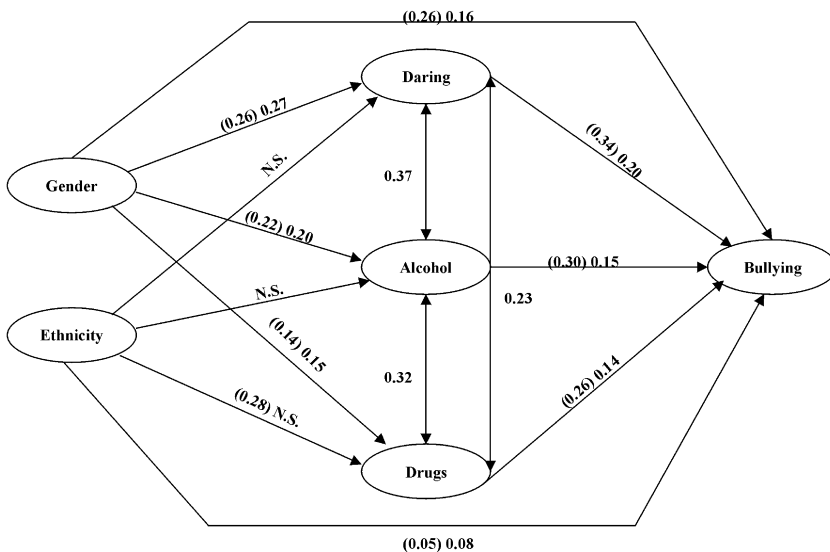
	Boys		Girls		Jew		Arab		t
	M	SD	M	SD	M	SD	M	SD	
Bullying	1.36	1.80	0.53	1.16	0.85	1.52	1.02	1.58	t(1495) = -0.98 p < 0.05
Weapon carrying	0.25	0.43	0.05	0.22	0.14	0.34	0.16	0.37	t(1513) = -1.63 p < 0.001
Fight	2.28	3.37	0.68	1.97	1.21	2.56	1.80	3.22	t(1492) = -1.29 p < 0.001
Daring	0.71	0.87	0.29	0.61	0.48	0.73	0.50	0.84	t(1493) = -0.69 p < 0.001
Alcohol	0.52	0.89	0.19	0.52	0.42	0.79	0.21	0.62	t(1529) = -8.92 p < 0.001
Drug	0.25	0.77	0.06	0.43	0.14	0.59	0.17	0.67	t(1253) = -5.31 p < 0.001

Figure 1 presents the path model predicting involvement in bullying. It was found that daring had the strongest correlation with bullying ($r = 0.34$; $p = 0.20$), followed by alcohol consumption ($r = 0.30$; $p = 0.15$), gender ($r = 0.26$; $p = 0.16$) and drug use ($r = 0.26$; $p = 0.14$). Ethnicity had the weakest correlation with bullying, both as a mean effect and as a partial effect (0.05 and 0.08, respectively).

Figure 2 presents the path model predicting weapon carrying. Here too, daring had the strongest correlation with weapon carrying ($r = 0.39$; $p = 0.24$), followed by alcohol consumption ($r = 0.33$; $p = 0.17$), gender ($r = 0.28$; $p = 0.16$) and drug use ($r = 0.28$; $p = 0.14$). As with bullying, ethnicity had the weakest correlation with weapon carrying—it was not significant as a mean effect and it was very low (0.07) as a partial effect.

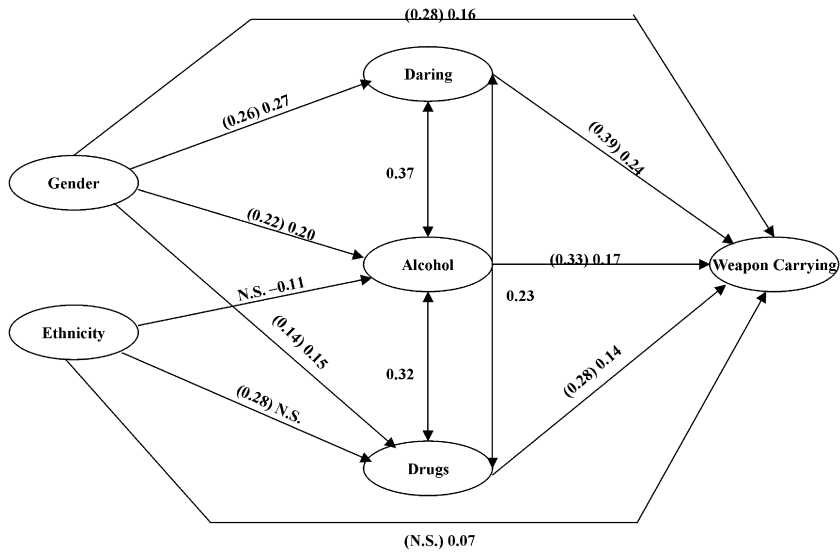
Figure 3 presents the path model predicting involvement in physical fights. Alcohol consumption was found to have the strongest correlation with fighting ($r = 0.30$; $p = 0.19$), followed by daring ($r = 0.30$; $p = 0.15$), gender ($r = 0.28$, $p = 0.20$), drug use ($r = 0.21$; $p = 0.08$) and ethnicity ($r = 0.10$, $p = 0.14$).

FIGURE 1. Path Model for Bullying



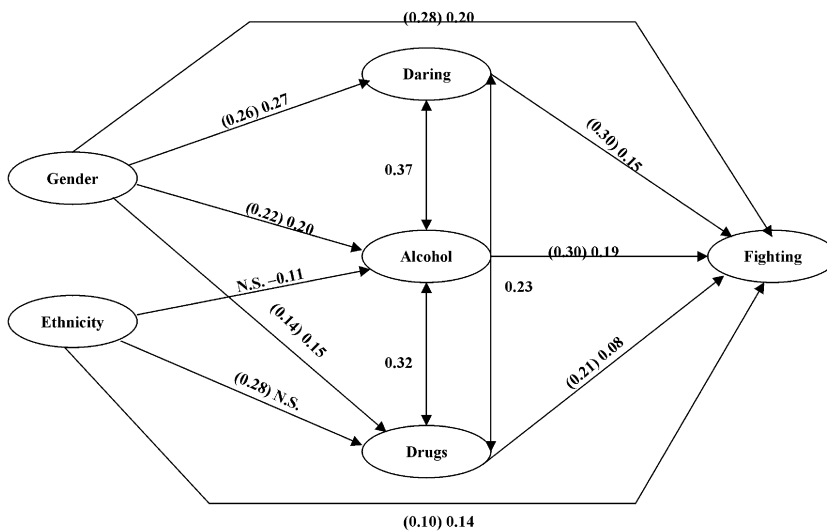
Note. Path coefficients in parentheses are bi-variant main effects, whereas coefficients without parentheses represent partial path coefficients.

FIGURE 2. Path Model for Weapon Carrying



Note. Path coefficients in parentheses are bi-variant main effects, whereas coefficients without parentheses represent partial path coefficients.

FIGURE 3. Path Model for Physical Fights



Note. Path coefficients in parentheses are bi-variant main effects, whereas coefficients without parentheses represent partial path coefficients.

DISCUSSION

The aim of this study was to explore determinants of violence in Israeli school age adolescents and to examine whether the association between drug use and violence could best be explained by the pharmacological properties of the drugs (Fagan, 1990; Wurmser & Lebling, 1983), involvement in the delinquent activities that are part of obtaining the drugs (Lowry et al., 1995; Goldstein, 1985) or as part of a behavioral cluster (Jessor, 1991).

In order to determine which of the three explanations could best explain this connection, a path analysis was performed for three violent behaviors: *bullying*—a continuous behavior which is commonplace in school settings; *weapon carrying*—a somewhat more severe behavior, which is a planned (or premeditated) behavior; and *fighting*—a more situational behavior resulting from tension in the social environment. All three indices measure different aspects of violence.

In the first stage, gender differences were examined. Boys were found to be more prone to violent behavior than girls, as was previously found (Craig & Harel, 2003; Ellickson, Saner & McGuigan, 1997; Orpinas, Basen-Enquist, Grunbaum & Parcel, 1995; Fergusson, Horwood & Lynskey, 1995). Boys also had higher involvement in substance use and daring, compared with girls. This is consistent with previous reports (Schmidt & Gabhainn, 2004; Ter Bogt, Fotioy & Gabhainn, 2004; Kosson, Streuerwald, Newman & Widom, 1994). These differences may be partly explained by different socialization processes which allow boys to act in a more rebellious manner than girls, while girls are expected to be more compliant with social norms (Crick & Grotpeter, 1995; Kosson et al., 1994). However, physiological and biological differences should also be taken into account.

It should be noted that according to the path analysis, gender had both a significant, strong main effect on youth violence, as well as a strong significant partial indirect effect through involvement in different risk behaviors. In other words, boys tend to be more involved in violent activities per se, and they are also more inclined to be involved in different risk behaviors which may elevate the risk of involvement in violence. However, a preliminary analysis of a new recent study in Israel (HBSC, 2004) shows a significant increase in smoking, alcohol and drug consumption as well as in violent activity among Israeli girls (Harel, forthcoming). This recent increase might be indicative of future changes in the gender pattern of risk behaviors.

Regarding ethnicity, Arab youth tended to be more involved in violence than Jewish youth. This difference is similar to previously reported data on other minority groups, as well as Arab youth living in Israel (Laufer & Harel, 2003; Zeira et al., 2003; Lowry et al., 1995; CDC, 1991). Being part of a minority group has long been considered as a stressor (e.g., Alva & Jones, 1994; Cervantes, Gilbert, Salgado de Snyder & Padilla, 1990) since minorities tend to belong to lower socioeconomic strata, which exposes them to more difficulties and stressful situations. Several studies have demonstrated that ethnicity differences in violence are attenuated when socioeconomic status is accounted for (CDC, 1985; Runyan & Gerken, 1989). The differences between Jewish and Arab violent behavior should be regarded as resulting from the different stressors and social situations they encounter. Arab students are subjected to higher poverty rates (Hareven, 1998), receive lower government welfare resources (Dichter, 1999) and their schools are much more crowded and ill-equipped (Kop, 1999).

However, Arab youth had much lower alcohol consumption than Jewish youth. The lower drinking rate among Arab youth has been reported elsewhere (Bar-Hamburger, 1998; Harel et al., 2002) and may be due to the fact that alcohol consumption is forbidden to Muslims, while spending time in the pubs tends to be a socially accepted leisure time activity for Jewish adolescents, although the minimum legal drinking age is 18. Therefore, drinking as a social activity is most likely to occur among Jews and not among Arabs.

Regarding drug use and daring, no difference between groups was found. Previous studies have suggested that Israeli-Arab youth tend to have a slightly higher rate of drug use, compared to Israeli-Jewish youth (Bar-Hamburger, 1998). However, this difference was mostly due to higher use of stimulants, while the use of cannabis among youth attending school was similar for Jews and Arabs. It should be recalled that the current sample included only school attenders and that the most prevalent drug was marijuana (see Harel et al., 2002). Thus in school attenders there may be no ethnicity difference regarding drug use, especially for marijuana.

No ethnicity difference was found for daring in the current study. To the best of our knowledge, the difference in daring between Jews and Arabs has never been studied, and deserves further attention.

Overall, these findings suggest that more research is needed on the differences between Jewish and Arab youth involvement in different risk activities and the social mechanisms that may account for them. Moreover, they also suggest that there may be some social factors

shielding Arab youth as a minority group from greater involvement in problematic activities, but one that fails to protect them from greater involvement in violence. Further studies on this issue are needed.

The main issue in the current study was to determine which path best predicts involvement in violence, over and above the effect of gender and ethnicity. The findings reveal an interesting picture of the association between risk behaviors and youth violence. Regarding both bullying and weapon carrying, daring was found to be the best predictor ($p = 0.20$ and $p = 0.24$ respectively), indicating that for these activities the behavioral pattern approach is the best explanation. This finding is consistent with the Parker and Auerhahn (1998) overview of literature suggesting that social variables are a much more powerful contributor to violent behavior than pharmacological ones. The current study suggests that this is especially appropriate regarding bullying and weapon carrying, which are pre-planned violent activities, in which one does not react to an aggressive situation but deliberately causes the situation to be violent. The fact that a teenager seeks out aggression may imply that his or her social-behavioral pattern may provide the best account for his or her actions.

However, when it comes to situational violence, i.e., *unplanned* violence such as physical fighting, alcohol consumption was the best predictor, as previously found (Raskin et al., 1998). This lends weight to the pharmacological explanation (Fagan, 1990; Wurmser & Lebling, 1983), suggesting that the pharmacological properties of alcohol may escalate aggression by lowering cognitive and behavioral inhibitions. In an unplanned violent activity one does not deliberately plan for the situation to be violent; rather, he or she reacts to a real or imagined threat. This reactive response seems to be more influenced by situational circumstance, such as alcohol consumption and to a lesser extent by one's behavioral pattern.

Overall, the findings suggest that youth violence should be regarded as a multi-faceted phenomenon. As such, it is unlikely that one theoretical explanation is sufficient, and different theoretical approaches are needed for explaining different types of violence. Moreover, even if one explanation may best explain a certain type of violent behavior, this by no means implies that other approaches are not valid. The three explanations should be regarded as complementary. For example, although it was suggested that the chemical explanation could best explain physical fighting, it should be recalled that daring had also a significant positive association with physical fighting. Therefore, the behavioral pattern should also be taken into account regarding physical fighting among

youth. Further, the significant positive association between the three risk behaviors, drug use, alcohol consumption and daring, also suggest that involvement in one problem activity is a risk factor for involvement in another problem behavior. This is consistent with findings suggesting that adolescents who engage in one high-risk behavior are likely to engage in others (Ellickson et al., 1997; Lipsitt & Mitnick, 1991; Ingersoll & Orr, 1989) and that chemical features, social environment and behavioral pattern are often intertwined. Moreover, although we used path analysis to predict violence, the correlation between violence and risk-taking activities can be reversed and violence may intensify the involvement in different risk-taking activities (for a more in-depth discussion on the advantages and disadvantages of using path analyses for exploring a path model see Asher, 1983).

Drug use by itself was the risk behavior that had the lowest, although significant, association with youth violence. This finding may suggest that the criminal model is the least cogent account for violence among adolescents attending school. However, it should be recalled that in the current sample only a low number of students reported drug use, compared to alcohol consumption or daring. Second, among the adolescents who did report using drugs, most used hashish or marijuana, which despite being illegal are considered to be less subject to criminal activities.

The limitations of this study should be pointed out. This study was based on a sample of school children in Israel, targeting the 80% of Israeli school children who attend state schools. Therefore, the results can be applied to this population alone. Non-school attendees or students who attend private schools may present a very different picture. Another limitation has to do with the violent activities that were examined in the study. Three types of violent behavior were examined, all of which fall into the category of mild violence. Cases of severe violence or criminal acts were not included. While extreme violence is less frequent in the sample, it would be prudent to assume that it exists, and that its features differ. To identify the characteristics and predictors of extreme violence, a different study should be conducted and on a different population.

Youth violence is now recognized as a significant obstacle to healthy educational, social and emotional adjustment (Craig & Harel, 2004). We believe that in planning future research and intervention programs, it would be useful to differentiate between planned and unplanned violent activity. Although there is a great similarity in the variables that predict these violent behaviors, apparently there are still differences. Though the results of the current study should be taken with caution,

there is reason to believe that planned violent activities will best be ameliorated by intervention programs targeting social behavioral predictors, whereas unplanned violent activities would best benefit from programs aimed at reducing alcohol consumption. By tailoring intervention programs to the form of violence that is most dominant, we may be able to enhance their efficiency.

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