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An Ecological Approach to Understanding Youth Violence: The Mediating Role of Substance Use

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Abstract

The authors tested an ecological model that posits mediating variables (substance use and mental health) in the association between ecological factors (family closeness, school closeness, and peer closeness) and youth violence in a sample of 4,783 adolescents. Model including substance use present significantly less total effect between ecological factors and youth violence than do models without substance use. Additional probing of significant mediation effect using the Sobel test was performed and suggested that substance use did function as a mediator in the hypothesized path. Considerations of adolescent violence should recognize the possible role of ecological factors and how their influence may vary by substance use.

Keywords

Family closeness; school closeness; peer closeness; substance use; violence; ecological model

Adolescent violence has been a great concern in American society for over two decades. According to Marcus (2005), youth are more vulnerable to violence than any other age group. Wiesner and Windle (2004) state, “adolescence is known as the peak period for delinquent activity on the aggregate level and characterized by changes and transitions in multiple domains (e.g. pubertal development, increasing engagement in or experimentation with various deviant behaviors, identity development, initiation of romantic relationships)” (p. 432). Data collected through the National Crime Victimization Survey in 1991 show that the most likely age group to be involved in serious violent crimes were adolescents (Snyder & Sickmund, 1995).

Many statistics have been published about adolescent violence, previously from research in juvenile justice and school settings. Juvenile justice research shows that violent adolescent crimes increased significantly from the 1980s to the mid 1990s, reaching its peak in 1994. In 2000, there were over two million arrests of adolescents under the age of 18, and of these arrests, nearly 100,000 were for violent offenses (Snyder, 2002). By 2001, “juveniles accounted for 17% of all arrests and 15% of all violent crime arrests” (Snyder, 2003, p.1).

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Adolescents who are violent frequently spend time in a juvenile correctional facility and, in some cases, spend time in adult correctional facilities depending on their age, the severity of the offense and the state's policy concerning transfers to criminal court for adolescents. While male adolescents are more likely to participate in violence, there has been an increase in the number of female adolescents participating in violence. Mullis, Cornille, Mullis, and Huber (2004), report an alarming trend for female juveniles between 1989 and 1993 that show "arrests for violent crimes increased 55% for juvenile females and by 33% for juvenile males" (p. 206). Also, according to the U. S. Department of Justice (2003), there was a 59% increase in female adolescents' involvement with the juvenile justice system for all juvenile offenses between 1990 and 1999.

Data from the Add Health Survey in 2001 showed that as much as 33% of high school students had been involved in at least one physical fight and 7.5% of these fights resulted in injury (Marcus, 2005). Data collected through the Center for Disease Control (2002) showed that, of those students who were involved in at least one physical fight in the 12 months prior to the survey, 54% had also been involved in fights in two or more instances, and of the students who had reported being injured during a fight, 37% also reported that they had been injured in fights in two or more instances. Furthermore, a World Health Organization international study of youth violence revealed that nearly one half (47.8%) of adolescent boys and one fourth (25%) of adolescent girls in the United States reported being involved in at least one physical fight in 2000. Of youth surveyed in European and North American countries, these results rank the United States as 29th in percentage of male youths involved in at least one physical fight in 2000 and 11th in percentage of female youths involved in at least one physical fight in 2000 (Krug, 2002).

Literature Review

Age and Violence

Research studies have shown that the earlier an adolescent begins a life of violence, the longer the adolescent tends to offend, turning into a chronic offender with violent and aggressive tendencies that extends into adulthood (Kethini, Blimling, Madden-Bozarth & Gaines, 2004; Stone, 2003). Nagin, Farrington and Moffitt (1995) conducted a longitudinal study and found that middle adolescents who unremittingly and repeatedly engage in violent behavior are highly likely to have begun this behavior in early adolescence. Engaging in violent behaviors at an early age has also been connected to a higher risk of developing secondary problems such as poor academic achievement, substance abuse and mental health issues such as depression (Capaldi & Patterson 1996).

Family Closeness

Additionally, several research studies have shown that factors such as family closeness, school closeness, peer closeness, mental health issues and substance abuse have an effect on adolescent violence. Family factors involving parenting practices of infrequent reasoning and frequent spanking seem to escalate adolescent violence (Harbin & Madden, 1979; Henry, Tolan & Gorman-Smith, 2001). Adolescents who reported lack of parent-child interactions and communication were more likely to participate in delinquent acts, including violence (Davalos, Chavez, & Guardiola, 2005; Henry et al., 2001; Kratcoski, 1985; Whitebeck, Hoyt, & Ackley, 1997). Those adolescents who had a strong bond or attachment during preadolescence extending into adolescence were less likely to be involved in violence (Hoffmann, 2003; Paschall, Ennett, & Flewelling, 1996; Smith, Flay, Bell, & Weissberg, 2001). Lastly, parents who have abusive behavior, either physical or verbal, were more likely to have children with these behaviors (Schreiber & Schreiber, 2002)

School and Peer Context

Outside the immediate family, the school setting has been identified as the most consistent institution in the lives of children (Cicchetti, Toth, & Maughan, 2000). According to Maguin and Loeber (1996), factors such as low academic achievement, academic failure and low commitment to school are related to delinquent behaviors and chronic offending (Wiesner & Windle, 2004). Also, adolescents who drop out of school are two and one half times more likely to participate in any type of delinquent act (Davalos et al., 2005; Ellickson, Saner, & McGuigan, 1997). Teacher support was also a significant predictor of pro-social behavior and student interest in school activities (Charlebois et al., 2004; Wentzel, 1998). Prior studies have provided empirical evidence that teacher support and good child-school relationship are protective factors for adolescents' behavioral and mental health outcomes (Bowen et al., 1998; Fottland & Matre, 2005; Murdock, 1999; Vedder, Boekaertes, & Seegers, 2005).

Additional social support in the school context can come from peers who are disapproving of violence. In the National Youth Survey, respondents who reported associating with peers who disapproved of violence reported less violent behavior by age 18 (Elliot, 1994).

Mental Health, Substance use, and Violence

There are also associations between adolescent violence and mental health, and adolescent violence and substance abuse. Mental health issues like depression (Moss & Lynch, 2001; Capaldi, 1992) have been found to be prevalent among adolescents who are violent, and these adolescents are one and one half times more likely to have poor mental health overall (Ellickson & McGuigan, 2000). Likewise, drug use was found to be a predictor of future violence among adolescents (Sussman, Simon, Dent, Steinberg, & Stacy, 1999). In a meta-analysis of 66 longitudinal studies related to violent behavior, substance use and general offenses (including status offenses and property crimes) had the strongest relationship to future offending in children (Lipsey & Derzon, 1998). Adolescents who are violent are ten times more likely to sell drugs and two to three times more likely to use alcohol, cigarettes or marijuana on a weekly basis than their nonviolent counterparts (Ellickson et al., 1997).

These statistics reveal the magnitude and prevalence of violence among both male and female adolescents. Previous research also points out the complexity of the violence problem. While understanding direct effects of family closeness, school closeness, mental health issues and substance abuse on adolescent violence is important, examining the influence of mediating factors is equally important. In identifying mediating relationships, the nature of the direct effects can be clarified.

Conceptual framework

Wilcox (2003) asserted that individual-level characteristics cannot account fully for the behavior among adolescents because there appear to be persistent, non-random patterns of adolescent problem behaviors across communities defined by geographical areas and groups defined by gender, race, education level, income, occupation and marital status in the past epidemiological study. This implies that we need a complimentary ecological model to focus on factors in children's lives that may place them at risk for, or help protect them from, undesired outcomes, as well as individuals' biological and psychological factors. Human ecology focuses on "the relationship between environmental and demographic characteristics of the population and the impact of these two broad sets of variables upon human behavior" (McBride & McCoy, 1981, p. 284). Ecology model looks at a child's development and behavior within the system of the interactions between a child, immediate environment (family, school, and peers) and larger social environment (community, society, culture), as well as interactions among different levels of the environment (Bronfenbrenner,

1977; Kumpfer & Turner, 1990). A considerable number of studies have shown that children's ecological contexts may serve as risk or protective factors for substance use (Robbins et al., 2006; Hawkins et al., 1992), mental health (Fotti et al., 2006) and problem behaviors (Cookston, 1999; Gorman-Smith et al., 1996; Tarter et al., 2002; Windle, 2000).

Much of the extant research has focused on direct influence of contextual factors on youth problem behaviors; however, considerably fewer studies have examined indirect or interactional (mediating or moderating) effects of various factors across different environmental contexts. Thus, we developed an integrated model including family closeness, school closeness, and peer closeness as distal factors, as well as individuals' mental health status and substance use as proximal factors on youth violence as shown in Figure 1.

We developed hypotheses linking the exogenous constructs of family closeness, peer closeness, and school closeness with the endogenous constructs of mental health status, substance use, and youth violence. Specifically, Figure 1 hypothesizes that ecological factors (family closeness, peer closeness, and school closeness) all directly affect mental health and substance use. Also, mental health and substance use have mediating functions in the relationship between ecological factors and youth violence.

Methods

Sample

To address these hypotheses, we used data from the first wave of the National Longitudinal Study of Adolescent Health (Add Health). *Add Health* is a multi-survey, multi-wave study of U.S. adolescents, their parents, and their schools (Bearman et al., 1998). In the initial in-school survey, conducted in 1994–1995, all students attending each of 134 high schools and their "feeder" middle schools (grades 7 through 12) were interviewed (N = 90,118). A randomly sampled subset of about 20,000 of these students, and in most cases was one of their parents, was subsequently interviewed at home. For this analysis, we select respondents who were attending school at the time of the initial in-home survey. The final sample included 2,287 boys (47.8%) and 2,496 girls (52.2%), with a mean age of 16.01 (SD = 1.62, range = 11-21).

Measures

Family closeness—Family closeness refers to the degree of close relationship with family members. It was assessed with three items (e.g., family pays attention to you) on five-point scale. Response categories ranged from 1 = "not at all" to 5 = "very much". Higher scores on the scale indicate more family closeness. Cronbach's alpha was 0.79.

Peer closeness—Child-peer closeness was measured with an item, "friends care about you". A higher score on the item indicates more peer closeness. Response categories ranged from 1 = "not at all" to 5 = "very much".

School closeness—School closeness refers to the degree of close relationship with teachers, and students, and feelings about school. It was measured with five items (e.g., feel close to people at school) on a five-point scale. Response categories ranged from 1 = "strongly agree" to 5 = "strongly disagree". Items on this scale were reversed, with the exception of item 3 (Students at school are prejudiced) so scores of the scale items would reflect 1 equal to "strongly disagree" and 5 equal to "strongly agree" in order to correspond with the previous mentioned scales of family closeness and peer closeness. Higher scores on the scale indicate more school closeness. Cronbach's alpha was 0.79.

Mental health—Mental health had three indicators, including depression, anxiety, and self-esteem. Depression was assessed with a 19-item, modified Center for Epidemiologic Studies-Depression Scale (CES-D). The original 20-item scale has been widely used as a measure of depressive symptoms in epidemiologic research and as a first-stage screening tool for clinical depression in community samples. In the modified scale available in Add Health, 2 original CES-D items were dropped, namely, "My sleep was restless," and "I had crying spells." One item was added; "I felt that life was not worth living." Two additional items were rephrased. Item scores on the modified scale correspond to symptom frequency and range from 0 (never or rarely) to 3 (most or all of the time); overall scale scores thus range from 0 to 56. The total score of the scale was used for the analyses. The scoring of four positive statements on the scale (4, 8, 11, and 15) was reversed. Higher scores on the scale indicate more depressive symptoms. Cronbach's alpha for the 19-item scale was 0.78. Anxiety was measured with two items (e.g., past year how often trouble relaxing) on five-point scale. Response categories ranged from 0 = "never" to 4 = "everyday". Cronbach's alpha was 0.42. Self-esteem was measured with 7 items (e.g., have lots of good qualities) on five-point scale. Response categories ranged from 1 = "strongly agree" to 5 = "strongly disagree". Cronbach's alpha was 0.85.

Substance use—Substance use was measured with three items (e.g., smoked cigarette regularly) with two response categories consisting of 0 = "no" and 1 = "yes". Higher scores on the scale indicate more substance use.

Violence—Youth violence was measured with four items (e.g., past year how often serious physical fight). Responses were anchored on 4-point scales, with 0 = "not at all" and 3 = "5 or more times". Higher scores on the scale indicate more violence. Cronbach's alpha was 0.59. All measurement items are presented in Appendix A along with item-to-total correlations for each measure.

Analyses and Results

The four indicators of violence were ordered categorical variables. Spearman correlations (a nonparametric analysis used for ordinal data) and Pearson correlations between these variables and the predictors were nearly identical. In addition, we ran tests of skewness and kurtosis on all of our variables and found them to be generally normally distributed (see Table 1). Given the similarity of the Spearman and Pearson correlations, the normal distribution of the variables and the large sample size, we chose to use Pearson correlations and structural equation modeling (SEM) using AMOS 6.0 (Arbuckle & Wothke, 2005). These robust parametric procedures were selected to increase power and protect against Type II error.

SEM was employed to evaluate the relationship between three distal factors (family closeness, peer closeness, school closeness) and youth violence, as well as the mediating role of proximal factors (mental health and substance use). A latent variables approach offers potential advantages in SEM analysis as it enables measurement error to be taken into account (Bollen, 1989). Typically, multiple items or measures are used to assess each latent variable (i.e., measurement model). In the present application, however, the three subconstructs of mental health (depression, anxiety, and self-esteem) were used as observed variables in the estimation of the latent mental health variable.

Descriptive statistics

As an initial step prior to testing structural models, bivariate correlations between family closeness, peer closeness, school closeness, mental health, substance use, and violence were

computed (see Table 2). All indicators of family closeness, school closeness, and peer closeness were negatively correlated with the measures of mental health, substance use, and violence. However, mental health and substance use were positively correlated with the measures of violence.

Structural equation modeling

In addition to chi-square, model fit was evaluated via the Comparative Fit Index (CFI), the Tucke-Lewis Index (TLI), and the root mean square error of approximation (RMSEA). Values of .90 and above have been recommended for CFI and TLI, and values of .08 and less have been suggested for RMSEA (Browne & Cudeck, 1993; Hu & Bentler, 1999). Indices of overall fit were generally good for the final model (χ^2 (129) = 1699.5, $p < .001$, CFI = .94, TLI = .90, RMSEA = .04).

In the resulting model (Figure 1), the latent variable youth violence sufficiently represents the three items with the standardized regression weights between 0.25 and 0.64. The variable mental health also represents the three indicators with the standardized regression weights between 0.36 and 0.71. Tobacco use, alcohol use, and marijuana use were represented by the latent variable substance use (standardized regression weights between 0.42 and 0.63). Also, two exogenous variables (family closeness and school closeness) significantly represent their indicators with the standardized regression weights from between 0.25 and 0.79.

Mediation model

According to Baron and Kenny (1986), a mediating model must meet the following criteria: the mediating variable (e.g., substance use) must significantly relate to the independent variable (e.g., family closeness), the dependent variable (e.g., violence) must significantly relate to the independent variable, and the dependent variable must significantly relate to the mediating variable. A mediating role is suspected when a previously significant relationship between the independent variable (e.g., family closeness) and dependent variable (e.g., violence) is substantially reduced when the mediation variable (e.g., substance use) is entered into the equation (Baron & Kenny, 1986).

We hypothesized that higher family closeness, school closeness, and peer closeness are related to lower health risk behaviors (i.e., violence composite). Higher closeness with family, peer, and school was also expected to relate to better mental health and lower substance use, which reasonably could be attributed to the adolescents' behavior, which in turn were then hypothesized to relate to engagement in more violence. Once the variable of substance use is added to the structural equation model, the direct relationship between ecological factors and violence should weaken. Substance use, therefore, was expected to function as a partial mediator between ecological factors and violence among adolescents. However, the variable mental health did not change the total effect in the association between ecological factors and violence, so we did not test mediating function of mental health. In addition, we did not test another possible mediation model of the association between peer closeness and violence because peer closeness did not significantly predict violence when tested directly.

As predicted for the direct path, family closeness had a direct effect on violence (standardized β weight = -.09, $p < .05$). For the indirect path, family closeness predicted substance use as expected (standardized β weight = -.38, $p < .001$). In addition, substance use predicted violence (standardized β weight = .51, $p < .001$). Post-hoc probing of significant mediation effect was performed as recommended by Holmbeck (2002) to determine if the drop in the total effect (i.e., family closeness to violence) was significant

upon inclusion of the mediator (substance use) in the model. The direct effect of family closeness to violence in the mediating model (standardized β weight = -.09, p <.05) was significantly decreased when compared to the direct effect of the model when not including substance use (standardized β weight = -.27, p <.001). The Soble test indicated that substance use did function as a mediator (z = -6.65, p <.001) (Preacher & Leonardelli, 2001).

Also, substance use partially mediated the relationship between school closeness and violence. For the direct path, school closeness had an effect on violence (standardized β weight = -.10, p < .001). For the indirect path, school closeness predicted substance use (standardized β weight = -.25, p < .001). In addition, substance use predicted violence (standardized β weight = .51, p < .001). The direct effect of school closeness to violence in the mediating model (standardized β weight = -.10, p <.05) was significantly decreased when compared to the direct effect of the model when not including substance use (standardized β weight = -.23, p <.001). The Sobel test indicated that substance use did function as a mediator (z = -6.14, p <.001).

Discussion

Additional knowledge was gained in this study regarding the relationship between ecological factors and youth violence. Existing literature examining relationships between ecological predictors and youth violence has mostly relied on correlational descriptive methods. These approaches are limited insofar as they cannot be used to model causal pathways between predictors and outcome variable. In addition, the lack of theoretical guidance is a common criticism of studies examining ecological influences on adolescent outcomes. Thus, the structural equation modeling approach to test theoretically-based hypothesized model for this paper fills a key gap in the current literature regarding specific pathways of influence for family closeness, school closeness and peer closeness on youth violence. Results of the study supported the proposed hypothesized structural equation model. Consistent with ecological theory, environmental factors continued to uniquely account for part of the path to adolescent violence, but substance use emerged as a significant mediator as well. The result implies that ecological factors (family closeness, school closeness, and peer closeness) affect violence directly and independently, but it is also affected by substance use. As the family closeness and school closeness decreased, adolescent's substance involvement increased, and as adolescent's substance use involvement increased, violent behaviors increased.

Most prior studies of the association between ecological variables and adolescent problem behaviors, however, examined main effects and did not consider the possibility that these associations could be affected by substance use. Prior research has already shown a reciprocal relationship between substance use and violence (Lipsey & Derzon, 1998; Sussman et al., 1999). The results of our current study are consistent with a role for substance use as a modifiable target area for interventions to reduce youth violence.

Our findings suggest that programs designed to prevent substance use may be appropriate approaches to maximize the effects of protective ecological factors on youth violence. Although our study focused on the mediating function of substance use, the findings also underscored the direct effects of ecological factors on youth violence, suggesting that interventions should equally emphasize improving children's relationship with family, school, and peers, as well as to prevent substance use.

A strength of the present study includes its large nationwide community sample of participants including an ethnically and socioeconomically diverse population of youth. It

allows for generalization to larger populations, exploration of patterns across race/ethnicities and socioeconomic status, and identification of groups at potentially high risk for substance abuse and violence.

However, the present results need to be placed in the context of methodological limitations. First, the items assessing each variable were brief, and prone to source variance due to self-report by only one reporter (adolescent). Second, though the effects of several ecological factors on youth violence were tested, other community factors, such as school quality, gang-related activity, prevalence of substance use and abuse, violent crime statistics, or community involvement should be included in the model to explain more fully how the physical and social environments of children influence their behavioral development. Third, we only tested the models on one age group. Future research is warranted to further investigate these models and the age at which a shift takes place, or if it exists at all. Longitudinal studies addressing how violence develops over time will be useful in examining individual trajectories, and thus, whether the salience of ecological factors varies developmentally. Fourth, we discussed the mediating role of substance use in the relationship between ecological factors and youth violence in the current study, but some possible moderators (potential buffers or exacerbating factors) of the effect of ecological factors on youth violence should be recognized and they also should be included in the model for a more comprehensive understanding of youth violence. Finally, we did not test the variability among racial/ethnic groups. Distinct differences in the rates of violent offending within different racial/ethnic groups have led to questions regarding the relationship between race/ethnicity and violence.

There are implications on two levels that can be derived from the results of this study. These implications are: (a) preventative strategies for children and families who are at risk for future substance use and, (b) violent behavior patterns and issues that should be addressed in adolescents who are already involved in using substances and exhibit violent behaviors.

First, preventative measures should be taken to avoid adolescent substance use and violent behavior. The family environment plays a vital role in prediction of adolescent violence and future substance use. One strategy to aid in prevention of both substance use and violence could be to enact early childhood home visitations. Previous research has indicated that children who grow up in abusive home environments are more likely to be abusive. Morantz and Torrey (2004) report that, “approximately 40% of episodes of child maltreatment may be prevented through early childhood home visits” (p. 997). Early childhood home visitation programs should focus on a variety of training programs for parents such as child abuse/neglect prevention, parenting skills, family planning assistance and problem-solving/life skills training (Morantz & Torrey, 2004).

Second, since family connectedness and substance use share underlying risks of violent behavior, for adolescents who are already involved in substance use and violent behaviors, programs should target both behaviors. Working with adolescents to change unhealthy behavior patterns of substance use and working to help modify their thoughts toward violence by teaching prosocial problem-solving skills and conflict resolution while, at the same time, working to strengthen the family bond could be an effective strategy (Herrenkohl, McMorris, Catalano, Abbott, Hemphill, & Toumbourou, 2007).

Appendix A

Construction of Indices

Family closeness (4 items)

Answers range: 1 (Not at all) to 5 (Very much)

1. Parents care about you.
2. Family understands you.
3. Family has fun together.
4. Family pays attention to you.

School closeness (6 items)

Answers range: 1 (Strongly agree) to 5 (Strongly disagree)

1. Feel close to people at school.*
2. Feel part of your school.*
3. Students at school are prejudiced.
4. Happy at your school.*
5. Teachers treat students fairly.*
6. Feel safe in your school.*

Peer closeness (1 item)

Answers range: 1 (Not at all) to 5 (Very much)

1. Friends care about you

Depressive symptoms (19 items)

Answers range: 1 (rarely or none of the time) to 5 (most or all of the time)

1. In past week bothered by things.
2. In past week had poor appetite.
3. In past week had the blues.
4. In past week felt just as good as other people.*
5. In past week had trouble keeping mind focused.
6. In past week felt depressed.
7. In past week too tired to do things.
8. In past week hopeful about the future.*
9. In past week felt life had been a failure.
10. In past week felt fearful.
11. In past week felt happy.*
12. In past week talked less than usual.
13. In past week felt lonely.

14. In past week people unfriendly to you.
15. In past week enjoyed life.*
16. In past week felt sad.
17. In past week felt people dislike you.
18. In past week hard to start doing things.
19. In past week felt life not worth living.

Anxiety (2 items)

Answers range: 0 (never) to 4 (everyday)

1. Past year how often-trouble relaxing.
2. Past year how often-fearfulness.

Self-Esteem (7 items)

Answers range: 1 (strongly agree) to 5 (strongly disagree)

1. Have lots of good qualities.*
2. Physically fit.*
3. Have a lot to be proud of.*
4. Like self as are.*
5. Do everything just right.*
6. Feel socially accepted.*
7. Feel loved and wanted.*

Substance use (3 items)

1. Smoked cigarettes regularly.
2. Drink alcohol more than 2-3 times.
3. Age first tried marijuana.

Violence (3items)

1. Past year-how often serious physical fight.
2. Past year-how often take part in a group fight.
3. Past year-how often loud or rowdy in a public place.

* The scoring of positive items is reversed.

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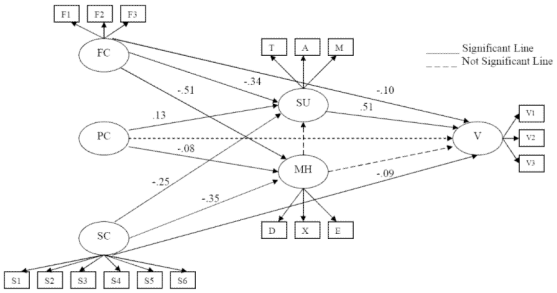

Figure 1.
Structural Equation Model.
Note. FC: Family closeness. PC: Peer closeness. SC: School closeness. V: Violence. F1: Understand. F2: Fun together. F3: Attention. S1: Feel close to people at school. S2: Feel part of your school. S3: Students at school are prejudiced. S4: Happy at your school. S5: Teachers treat students fairly. S6: Feel safe in your school. T: Smoked cigarettes regularly. A: Drink alcohol more than 2-3 times. M: Age first tried marijuana. D: Depression. X: Anxiety. E: Self-esteem. V1: Physical Fight. V2: Group fight. V3: Loud in a public place.

Table 1

Mean, Standard Deviation, Skewness, and Kurtosis.

	Mean	SD	Skewness	Kurtosis
1. Family Closeness (FC)				
Understand (FC1)	3.61	1.01	-.40	-.29
Fun together (FC2)	3.75	1.03	-.55	-.20
Attention (FC3)	3.93	.94	-.68	.13
2. School Closeness (SC)				
Feel Closeness (SC1)*	2.29	1.01	.79	.23
Feel Part of School (SC2)*	2.29	1.01	.96	.53
Prejudiced (SC3)	2.91	1.21	.06	-1.00
Happy (SC4)*	2.32	1.14	.77	-.16
Teacher's Fairness (SC5)*	2.52	1.09	.54	-.44
Feel Safeness (SC6)*	2.19	1.02	.87	.33
3. Mental Health (MH)				
Depression (MH1)	21.21	6.96	.89	1.12
Anxiety (MH2)	1.21	1.29	.52	.53
Self-Esteem (MH3)*	26.30	4.23	-.41	.25
4. Substance Use (SU)				
Tobacco (SU1)	.56	.50	-.23	-1.95
Alcohol (SU2)	.55	.50	-.21	-1.96
Marijuana (SU3)	3.71	6.32	1.17	-.52
5. Violence (V)				
Physical Fight (V1)	.45	.77	1.83	2.86
Group Fight (V2)	.25	.60	2.76	8.08
Loud in a public place (V3)	.69	.89	1.26	.78

* Reversed scores

Table 2

Correlations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. FC1	–																	
2. FC2	.52**	–																
3. FC3	.55**	.61**	–															
4. SC1	.21**	.18**	.18**	–														
5. SC2	.23**	.23**	.23**	.58**	–													
6. SC3	.13**	.11**	.10**	.11**	.13**	–												
7. SC4	.23**	.24**	.22**	.46**	.53**	.18**	–											
8. SC5	.22**	.21**	.23**	.26**	.28**	.17**	.39**	–										
9. SC6	.17**	.14**	.18**	.31**	.34**	.17**	.40**	.38**	–									
10. MH1	-.32**	-.27**	-.31**	-.21**	-.24**	-.16**	-.25**	-.21**	-.21**	–								
11. MH2	-.36**	-.32**	-.34**	-.26**	-.34**	-.11**	-.30**	-.20**	-.22**	.44**	–							
12. MH3	.20**	.15**	.17**	.08**	.11**	.14**	.11**	.11**	.09**	-.40**	-.26**	–						
13. SU1	-.14**	-.14**	-.12**	-.09**	-.15**	-.09**	-.18**	-.10**	-.07**	.10**	.10**	.03	–					
14. SU2	-.20**	-.22**	-.18**	-.09**	-.10**	-.15**	-.16**	-.17**	-.08**	.19**	.13**	.10**	.14**	–				
15. SU3	-.19**	-.21**	-.15**	-.11**	-.15**	-.08**	-.19**	-.16**	-.07**	.17**	.13**	.11**	.23**	.41**	–			
16. V1	-.09**	-.07**	-.10**	-.09**	-.11**	-.02	-.14**	-.12**	-.13**	.13**	.05**	.03*	.06**	.12**	.15**	–		
17. V2	-.09**	-.09**	-.10**	-.03**	-.05**	-.05**	-.09**	-.12**	-.09**	.13**	.05**	.04**	.02	.17**	.20**	.43**	–	
18. V3	-.19**	-.18**	-.16**	-.06**	-.07**	-.08**	-.13**	-.16**	-.07**	.17**	.12**	.13**	.06**	.25**	.21**	.23**	.30**	–

Note. FC: Family closeness. SC: School closeness. MH: Mental health. SU: Substance use. V: Violence.

** $p < 0.01$.