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Risk Factors Related to Suicidal Behavior Among Male and Female Adolescents

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This study examined gender differences in self-reported suicidal behavior in relation to the risk factors of tobacco use, alcohol use, drug use, school misconduct, academic difficulties, home environment, sexual activity, and violence among seventh- through twelfth grade students (N = 3461) in a northern Midwest school district. Data were gathered from the Survey Instrument of Attitude/Behavior administered in the school district during the spring of 1993. The dependent variables were suicidal activity and suicidal tendency. Stepwise forward regression ordered the independent factors in predicting suicidal activity and suicidal tendency for the male and female samples. The comparison of regression results revealed the following: (1) the independent factors accounted for more variance in male suicidal activity and tendency than in female suicidal activity and tendency; (2) as the level of suicidality increased, so did the frequency of violent behaviors among both genders; (3) leading predictors for suicidal activity were similar between gender; and (4) gender differences were displayed in predictors of suicidal tendency.

INTRODUCTION

In 1985, suicide became the second leading cause of death among persons aged 15–24, a startling fact that is reflected in a suicide rate of 11.3 per 100,000 young adults (Centers for Disease Control, 1991). However, for every adolescent who commits suicide, 200–300 adolescents attempt it (Curran, 1987). While the suicide attempt is by far the most overt behavior of suicidal youth, other self-destructive behaviors, such as substance use,

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violent acts, truancy, and running away from home, have been associated with suicidality in youth. In addition, gender differences have been identified not only in rates of suicide attempts and completions but also in the risk behaviors that are exhibited by suicidal youth. Generally, suicidal males are likely to display acts of violence, school misconduct, and substance use, whereas suicidal females are likely to run away and be sexually promiscuous (Frances and Blumenthal, 1991; Levy and Deykin, 1989; Rosenberg and Latimer, 1966; Shaffer and Caton, 1984). Several researchers attribute these gender differences in suicidal behavior among adolescents to the gender differences present in adolescent development—differences in the behaviors associated with attachment (de Jong, 1992; Gilligan, 1982; Wade, 1987), success orientation, aggression, and help seeking (McDowell, 1985; Stillion *et al.*, 1989).

METHOD

Subjects

The studied district elicited participation from its three junior high and two senior high schools, totaling a population of approximately 4100 adolescent students. Parental consent was passively obtained when parents did not communicate their disapproval of participating in the survey to the respective school administration after receiving notification of the purpose and intent of the survey through several school newsletters. Both parents and students were assured anonymity in that the Survey Instrument of Attitude/Behavior (SIAB) would not elicit identifiable information in any way. Primarily due to absenteeism, 3461 students completed the survey.

Instrument

Data were gathered from the SIAB administered in a school district located in a medium-sized Midwest city during the spring of 1992. The SIAB was developed by the participating school district to fulfill a funding requirement of the Drug-Free Schools and Community Act mandated by the State Department of Education. The purpose of the SIAB was to obtain a districtwide picture of the attitudes and behaviors concerning risk-taking behaviors among adolescents. When the survey was completed, the district piloted it with approximately 150 sixth-grade students, after which students were interviewed to obtain information regarding the readability of the instrument and possible changes to be implemented. After this pilot study, the survey development committee concluded that the SIAB was at ap-

proximately a sixth-grade reading level, was adequate in form and content, and did not require any major revisions.

The SIAB contained 100 multiple choice questions, which can be divided into six categories: substance use, problems in school, home environment, sexual activity, violence, and suicidal behavior. The demographics of gender, grade, race, and school were obtained through presurvey items.

Data Collection

The SIAB was administered throughout March of 1993 in conjunction with the Survey Instrument of Knowledge of Alcohol & Other Drugs, also developed by the studied district. Both surveys were given over a two-day period under the same instructions. To assist the district in obtaining valid results, the English teachers were asked to set a serious tone in the classroom by reading several directions to the students prior to taking the survey. After receiving No. 2 pencils, survey booklets, and National Computer Systems (NCS) scanning forms, students were told the district's purpose in administering the survey and were reminded that the following assessment would not be timed and that no identifiable information would be revealed through participating in the survey. Students were asked to follow along in their survey booklet while an instructor read the survey directions. The instructor guided the students through the presurvey questions concerning the demographics of gender, grade, race, and school. Upon completion of these items, students were told to use the provided No. 2 pencil when blackening circles, to erase stray markings, to not write one's name on the survey booklet or NCS form, to raise a hand to ask questions, and to mark only one response for each question.

Having completed the survey, each participant placed the survey's NCS form in a manila envelope that had been set in the back of the classroom. After collecting all of the manila envelopes containing survey forms from instructors, the building principals sent the envelopes to the district's assistant superintendent, who then forwarded the surveys to the researcher.

Analysis

From 3461 completed surveys, 63 were eliminated for containing a significant number of missing responses, leaving 3398 student surveys for analysis. Factor analyses reduced the 100 item survey to the following 15 independent factors with the respective alpha coefficients of reliability: cigarette use (.8279), smokeless tobacco use (.7903), alcohol use (.9058), alcohol behavior (.8678), hard drug use (.9498), marijuana use (.8858),

over-the-counter drug use (.7371), school misconduct (.6209), academic difficulties (.4563), home environment (.5353), miscommunication with parents (.6499), unfair/strict rules of parents (.3365), sexual activity (.8167), forcible sex (.4681), and violence (.8053). Specific factor definitions are as follows:

- *Academic Difficulties*: Poor academic performance in classes, such as low current grades, being held back a grade, previous course failures.
- *Alcohol Behavior*: Behaviors exhibited during alcohol use, such as drinking in school, being drunk in school, drinking and driving, riding with a drunk driver, drinking before intercourse.
- *Home Environment*: Guardian with whom the adolescent is living, amount of time spent with parents, ability to talk about problems with parents, frequency of getting in trouble at home, and how the adolescent perceives parental rules and parental expectations of, knowledge of, and reaction to adolescent drug and alcohol use.
- *Forcible Sex*: Being forced to have sex, forcing someone to have sexual contact, and being touched by or touching a relative.
- *Miscommunication with Parents*: Frequency of talking with mother or father about problems.
- *School Misconduct*: Behaviors displayed in the school environment that may lead to negative consequences: poor class attendance, attending class under the influence of drugs or alcohol, little time spent studying, being sent to the principal's office, and little participation in extracurricular activities.
- *Sexual Activity*: Behaviors regarding the practice of sexual intercourse, such as the number of partners, age of first sexual experience, contraception use.
- *Substance Use*: Use (frequency during life and the past 30 days and age of first use) involving the substances of alcohol, cigarettes, smokeless tobacco, marijuana, hard drugs (i.e., cocaine, crack, inhalants, acid, steroids), over-the-counter drugs (i.e., NoDoz, Vivarin, Dexatrim).
- *Unfair/Strict Rules*: Poor perceptions of parental rules in terms of fairness and strictness; 30 day frequency of getting in trouble with parents.
- *Violence*: Thirty day frequency of getting in trouble with the law, damaging property, and fighting.

The dependent variable of suicidal behavior was addressed in two ways. The first method created a total score for each respondent by summing the 3 SIAB items that related to suicide: Item 87, Item 88, and Item

89. Item 87 addressed the frequency of considering a suicide attempt, Item 88 pertained to frequency of planning a suicide attempt, and Item 89 addressed the frequency of actual suicide attempts. All 3 items contained frequencies for the past 30 days. Therefore, a high score referred to a high frequency of suicidal activity within the 30 day period. The range of values for this variable was a minimum of 0 (no suicidal activity) to a maximum of 15 (high suicidal activity). Since levels of suicidal activity, i.e., suicide thoughts, plans, attempts, can be ascertained from this score, this first dependent variable of suicidal behavior was labeled suicidal activity.

The second method dichotomized the variable of suicidal behavior by dividing the studied sample into two groups according to their responses to Items 87–89: those who reported no suicidal activity and those who reported considering, planning, or attempting suicide at least once in the last 30 days. Because the level of suicidal activity was not differentiated in this variable, it was labeled suicidal tendency. From the 3398 respondents, 789 reported suicidal tendency (23.2%). The reliability of this scale (Items 87–89) was also calculated generating an alpha coefficient of .8851. [redacted]wise forward regression ordered the independent factors in predicting suicidal activity and suicidal tendency for the male and female samples.

RESULTS

Demographic and Behavioral Characteristics

Grade size ranged from 453 students in twelfth grade to 696 students in seventh grade. Female respondents numbered 1672 (49%) compared to 1738 males (51%). The majority (86.2%) of the sample was Caucasian, with Native American (3.3%), Black (2.5%), Hispanic (2.5%), Asian (2.3%), and "other" (3.0%) representing the remainder of the sample. In addition, the majority (66.3%) of respondents lived with both parents, while (12.7%) lived with mother only and (10.3%) lived with mother and stepfather.

Alcohol (40.8%), cigarettes (32.4%), and over-the-counter drugs (25.4%) were the most commonly used substances by the respondents in the past 30 days. Approximately 43% of respondents reported having sexual intercourse, of whom 22.3% began having sexual intercourse under the age 12. Approximately 9% of the total sample reported being forced to have sexual intercourse in the past 30 days. Nearly 13% of respondents ran away from home in the last 12 months. The responses to the frequency of physically fighting indicated that nearly 25% of the respondents fought at least once in the past 30 days. Approximately 21% of all seventh- through twelfth-grade students considered attempting suicide in the past 30 days.

In general, female respondents thought of attempting suicide more than males, since over 25% of females considered suicide compared to 17% of males. Slightly more females (15%) planned suicide than males (13.5%), while males (9.6%) attempted suicide more than females (7.6%).

Regression Results

A stepwise forward regression analysis prioritized the independent factors in order of their ability to contribute to the overall prediction of suicidal activity and suicidal tendency for males and females. The stepwise regression results for suicidal activity are presented in Table I and display similarities in the predictors for male and female suicidal activity. Identified as leading predictors of suicidal activity among males, five independent variables were entered into the regression equation accounting for more than 1% of change in R^2: violence, home environment, forcible sex, unfair/strict rules, and alcohol behavior. All of the independent factors accounted for 52.1% variability in male suicidal activity. For females, this same analysis generated five factors: violence, home environment, unfair/strict rules, forcible sex, and over-the-counter drug use. However, the independent factors only accounted for 37.8% of variability in female suicidal activity.

Stepwise forward regression analysis of suicidal tendency also generated a common leading predictor for males and females—school misconduct (Table II). Leading predictors for male suicidal tendency that accounted for more than 1% change in R^2 were school misconduct, forcible sex, unfair/strict rules, and home environment. Six independent variables were entered into the regression equation and accounted for 30.7% of the variability. Leading predictors for female suicidal tendency that accounted for more than 1% change in R^2 were: school misconduct, over-the-counter drug use, unfair/strict rules, and cigarette use. Seven independent variables were entered into this regression equation and accounted for only 24.9% of variability.

DISCUSSION

Comparing Dependent Variables

For both genders, the leading predictors for suicidal activity were violence and home environment, while the common leading predictor for suicidal tendency was school misconduct. These differences in predictors were most likely due to the differences in the dependent variables of suicidal

Table 1. Comparison Between Males and Females of Stepwise Regression Results for Suicidal Activity

Males						Females					
Step	Factor	R^2	R^2 change	Beta	p	Step	Factor	R^2	R^2 change	Beta	p
1	Violence	.3913	.3913	.1256	<.001	1	Violence	.2600	.2600	.1286	<.001
2	Home Enviornment	.4501	.0588	.2104	<.001	2	Home Environment	.2926	.0326	.1367	<.001
3	Forcable Sex	.4916	.0415	.2002	<.001	3	Unfair/Strict Rules	.3229	.0303	.1459	<.001
4	Unfair/Strict Rules	.5044	.0127	.1268	<.001	4	Forcable Sex	.3450	.0221	.1511	<.001
5	Alcohol Behavior	.5185	.0115	.1601	<.001	5	Over-the-Counter Drugs	.3584	.0134	.1265	<.001
6	School Misconduct	.5209	.0051	.1093	<.001	6	Sexual Activity	.3645	.0061	.0865	<.001
						7	Hard Drug Use	.3710	.0065	.1034	<.001
						8	Miscommunication with Parents	.3749	.0039	.0642	.001
						9	School Misconduct	.3780	.0031	.0815	.001

Table II. Comparison Between Males and Females of Stepwise Regression Results for Suicidal Tendencies

Males						Females				
Step	Factor	R^2	R^2 change	Beta	p	Step	Factor	R^2	R^2 change	Beta	p
1	School Misconduct	.2294	.2294	.2132	<.001	1	School Misconduct	.1238	.1238	.0910	<.001
2	Forcible Sex	.2590	.0297	.1553	<.001	2	Over-the-Counter Drugs	.1793	.0555	.1588	<.001
3	Unfair/Strict Rules	.2817	.0227	.1471	<.001	3	Unfair/Strict Rules	.2071	.0279	.1703	<.001
4	Home Environment	.2945	.0128	.1195	<.001	4	Cigarette Use	.2289	.0218	.1437	<.001
5	Over-the-Counter Drugs	.3018	.0073	.0916	<.001	5	Home Environment	.2382	.0093	.1001	<.001
6	Academic Difficults	.3071	.0053	.0769	<.001	6	Forcible Sex	.2435	.0053	.0851	.001
						7	Miscommunication with/Parents	.2487	.0052	.0742	.001

activity and suicidal tendency. As an interval/ratio variable, suicidal activity differentiates the various levels of suicidality such as considering, planning, and attempting. As these levels of suicidality increase, so does the frequency of violent and aggressive behaviors. Specific items addressed in the factor of violence were frequency of getting in trouble with the law, physically fighting, and damaging property. Such behaviors were also found related to suicide completers by Shafii *et al.* (1985) and Alessi *et al.* (1984). The other leading common predictor of suicidal activity was dissatisfaction with home environment. The item with the highest loading for this factor of home environment was frequency of running away. Studies by Robins (1989) and Shaffer and Caton (1984) cited the act of running away as being highly related to suicidal activity in both males and females, since running away is an aggressive act of escaping an undesirable situation at home, much like suicide. Another item contributing to the factor of home environment was the guardian with whom the respondent was living, such as with both parents, one parent, one parent with stepparent, guardian, or foster home. Therefore, not living with both parents increased the risk of suicidal activity among the sample. Research by Shafii *et al.* (1985) concluded that high prevalences of family breakup were found in families of suicide victims.

In contrast to suicidal activity, the variable of suicidal tendency in no way measures levels of suicidality; therefore, violence was not a leading predictor of suicidal tendency. In addition, the majority (72.4%) of those who reported suicidal tendency (23.2% of the total sample) had only considered and/or planned suicide. Therefore, this variable is somewhat representative of early suicidal behavior, which is often characterized as less aggressive and violent. Consequently, the leading predictor for both male and female suicidal tendency was school misconduct, a factor that consisted of the behaviors of skipping school, getting in trouble at school, bringing a weapon to school, hours spent working at a part-time job, and hours without adult supervision. The items with the highest loading were skipping school and getting in trouble at school. Barter *et al.* (1968) similarly reported disciplinary and truancy problems as highly related to suicidal adolescents. However, Frances and Blumenthal (1991) found that problems in school misconduct were much more common in male suicidal victims.

Comparing Gender

Several conclusions were derived concerning risk behaviors/factors related to suicidal behaviors among males and females. In general, the SIAB was better in predicting factors related to suicidal behavior for males than

for females. This may be due to the content addressed in a majority of the survey questions, as many of them dealt with overt aggressive behaviors, more often related to males than females. Therefore, despite similarities in predictors for males and females, the predictors for males are stronger as they account for more variability in male suicidal behavior.

Predictors for suicidal activity among males and females were similar and were generally more violent and aggressive in comparison to predictors of suicidal tendency. Although the leading predictor for suicidal tendency among both males and females was school misconduct, the remaining predictors for suicidal tendency among males and females were different. The second leading predictor for males was forcible sex, which was identified as being the sixth predictor for female suicidal tendency. This may be due to the item representation for this factor, since the question with the highest loading was, "Have you forced anyone to have sexual contact?" The majority responding affirmatively to this question was male, therefore increasing the strength of this factor for males. In addition, forcing someone to have sexual contact is generally an act of violence in response to feeling out of control, an act that is quite similar to suicide. Literature supporting or negating the relation of forcible sex to suicidal behavior is very minimal.

The second leading predictor for suicidal tendency among females was over-the-counter drug use. Examples of over-the-counter drugs given in the survey were Vivarin, NoDoz, and Dexatrim. One explanation for this predictor may be that females are more likely to use diet pills for weight problems, the use which may indicate poor body image and low self-esteem often associated with suicidal females. Another explanation may be that females are more likely to overdose on over-the-counter drugs as a suicide method, whereas males, when overdosing, use harder, more lethal drugs (Stillion *et al.*, 1989).

Another predictor of suicidal tendency unique to females was cigarette use. Recalling that society has acknowledged few acceptable outlets for females to express anger or aggression, females may be using cigarette use as a more passive, acceptable means of expressing these feelings often related to suicidal behavior. Few studies exist relating cigarette use to suicidal behavior.

CONCLUSIONS

Based on the findings of this study, several conclusions were formulated.

1. The independent factors accounted for more variance in male suicidal activity and tendency than in female suicidal activity and tendency.
2. As the level of suicidality (considering, planning, attempting) increased, so did the frequency of violent behavior for both genders.
3. Leading predictors for male and female suicidal activity were violence, home environment, unfair/strict rules, and forcible sex.
4. The leading predictors for suicidal tendency among males and females were school misconduct, unfair/strict rules, and home environment; unique leading predictors for female suicidal tendency were over-the-counter drug use and cigarette use; a unique leading predictor for male suicidal tendency was forcible sex.
5. The significance of these findings suggest that suicide prevention/intervention programs should address gender differences in suicidal behavior as well as the behavioral differences that exist within the various levels of suicidality.

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