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Correlates of Suicidal Behavior in a

Juvenile Detention Population

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Abstract

The present study identifies the correlates of current suicidal ideation and past suicide attempt among 555 adolescents in a county juvenile detention center. Suicidal behavior in delinquent boys was generally associated with depression and decreased social connection whereas suicidal behavior in delinquent girls was associated with impulsivity and instability. Current ideation was most significantly associated with current depression. In multivariate analyses, past attempts were associated with suicidal ideation and ineffective coping for males; with major life events and impulsivity for females; and with not residing with at least one biological parent prior to detention for both males and females.

Correlates of Suicidal Behavior in a
Juvenile Detention Population

Suicidal ideation and suicide attempts among adolescents are increasingly being recognized as important public health problems. Recent epidemiologic studies suggest that the lifetime prevalence of suicide attempts among high school students ranges from 3.5% to 9% (Velez & Cohen, 1988; Andrews & Lewinsohn, 1992). Fortunately, the number of actual deaths due to suicide among adolescents remains much lower. Nonetheless, these deaths are particularly tragic since they occur so early in the individual's lifespan. In addition, the suicide of a young person is of concern because adolescents are at greater risk than older individuals for attempting suicide following the suicide of another individual (e.g., Gould et al., 1990).

Although understanding the factors associated with completed suicide may be of most obvious concern, studying the nonlethal behaviors of suicidal ideation and attempt is important for several reasons. First, suicidal ideation is relatively common and almost invariably precedes a suicide attempt or suicide (e.g., Lewinsohn, Rohde, & Seeley, 1996). Second, a history of suicide attempt represents the strongest known risk factor for future suicide attempts and completions (e.g., Farberow 1989; Marttunen, Aro, & Lönnqvist, 1992). Third, completed suicides are too infrequent to study without extremely large samples. We believe that studying suicidal ideation and suicide attempts will provide important clues to understanding the much less frequent occurrence of actual suicide.

Given the significance of this problem, the study of suicidal behavior among adolescents living in the community as well as those in treatment centers has been an active area of research. Recent reviews (e.g., Hoberman, 1990; Grosz, Zimmerman, & Asnis, 1995; Shaffer, Garland,

Gould, Fisher, & Trautman, 1988) as well as a number of important studies (e.g., Brent et al., 1988; Cairns, Peterson, & Neckerman, 1988; Fowler, Rich, & Young, 1986; Lewinsohn, Rohde, & Seeley, 1994; Marttunen, Aro, & Lönnqvist, 1992; Shafii et al., 1985) seem to reach a general consensus regarding many of the variables that are associated with adolescent suicidal behavior. Risk factors for suicide attempt or completed suicide include older age, gender (females make more suicide attempts, males are more likely to actually die from suicide), being Caucasian, history of previous suicide attempts, psychiatric disorder (especially depression, conduct disorder, or substance abuse), aggression and antisocial behavior, exposure to suicidal behavior by others (most commonly family members or friends), history of abuse, elevated levels of stressful life events, poor coping and problem-solving skills, impaired social skills, lack of social support, impulsivity, access to lethal means, and lack of parental monitoring.

Although suicidal ideation and suicide attempts have been shown to be significantly more prevalent in female community adolescents compared to male community adolescents (e.g., Lewinsohn, Rohde, & Seeley, 1996), we have not found significant gender differences in the degree to which psychosocial variables are risk factors for future suicide attempt (Lewinsohn, Rohde, & Seeley, 1994) or associated with past suicide attempt (with the one exception of early pubertal maturation being associated with past attempt for young women but not young men; Lewinsohn, Rohde, & Seeley, 1993). More research is needed to understand the factors that contribute to gender differences in the patterns of adolescent suicidal behavior.

Given the importance of suicidal behavior and the relatively low base rate of suicide attempts among adolescents in general, we focus in the present study on an understudied but high-risk group of adolescents: incarcerated delinquent teenagers. Delinquency is a legal term

referring to the perpetration of a criminal offense by a child or adolescent; it overlaps but is not synonymous with the psychiatric diagnosis of conduct disorder.

Adolescents in juvenile detention facilities are a particularly relevant group for study because they are at high risk for both suicide attempts and suicide (Cole, 1989; Flaherty, 1983; Hendren & Blumenthal, 1989; Morris et al., 1995). The rate of actual deaths due to suicide for adolescents in juvenile detention centers has been estimated to 4.6 times as high as the rate in the general population (Memory, 1989). The rates of suicide attempt and completed suicide appear to be especially high for young women who have been incarcerated as adolescents (Lewis et al., 1991). The high rate of suicidal behavior among delinquent adolescents is not unexpected given that these adolescents often have many of the known risk factors for suicidal behavior, including elevated levels of acute and ongoing stress (including the stress associated with being detained), psychiatric disorder (especially conduct disorder and substance use disorders), poor coping resources, social support deficits, and problems with impulsivity, hostility, and passivity or avoidance (e.g., Chiles, Miller, & Cox, 1980; Joffe et al., 1990).

The theoretical model that guided this research is multivariate and interactive. It shares many similarities with previously described models of suicidal behavior (e.g., Hoberman, 1990; Bonner & Rich, 1988). The presence and interaction of distal factors, both internal (e.g., psychiatric disorder and prior suicide attempts) and external (e.g., family discord), are proposed to lead to the development of a high-risk youth. In the presence of stressful life events, emotional distress (most commonly dysphoria) is experienced, which can be alleviated through adequate coping behaviors or social support. The absence of these protective factors increases the probability that suicidal ideation will develop. Two factors are hypothesized to contribute to the

progression from suicidal ideation to attempt: (1) impulsivity, either as a personality characteristic or as a consequence of substance abuse, and (2) being in a dangerous setting, which is defined as a place in which one has access to lethal means, adult monitoring is inadequate, and others are engaging in suicidal behaviors. We propose that without these factors, suicidal ideation is unlikely to lead to an actual attempt.

Although we were unable to test prospective predictions in the present study, the following hypotheses can be offered. First, major life events and depression are predicted to be associated with both suicidal ideation and suicide attempt. Second, depression, poor coping skills, and inadequate social support should be more strongly related to suicidal ideation than to suicide attempt. Third, in addition to suicidal ideation, impulsivity and factors associated with a dangerous setting (e.g., lack of parental monitoring, modeling of suicidal behavior by family and friends) should be among the variables most strongly related to suicide attempt.

The primary goal of the present study was to identify the correlates of current suicidal ideation and past suicide attempt, both in univariate and multivariate analyses, in a sample of adolescents within a county juvenile detention center. Potential gender differences in these associations were of particular interest. Prior to examining these associations, we verify the magnitude of suicidal behavior as a problem for this sample.

Method

Subjects and Procedures

Data collection took place at a 36-bed secured detention facility that provides residential services to several hundred youth in the county per year. Average stay in the facility in recent years has been 17.6 days, although the distribution is negatively skewed due to many shorter

placements. Youth who are held in the facility have been accused of crimes against persons and felony crimes against property, or if adjudicated, violations of the conditions of probation. The detention center is neither an evaluation nor punishment center. Youth are held by court order pending trial or awaiting placement in a treatment center. Factors that influence the length of stay include court docket time, attorney preparation time, availability of witnesses, and availability of bed space in treatment facilities.

Adolescents completed an 188-item questionnaire assessing variables in the present study within the first few days of entry into the facility. The questionnaire took approximately 25 minutes to fill out and was part of the packet of materials completed by adolescents for orientation to detention.

Between November, 1992 and July, 1995, 1,035 questionnaires were completed by 555 adolescents, or approximately 59% of the youth who were detained in the center during this time period. Participation was related to length of detention stay. Adolescents who were detained for three days or less seldom completed the questionnaire (25.6% participation rate), whereas participation for adolescents detained for four or more days was 81.0%. Participants did not differ from nonparticipants in terms of gender; $\chi^2(1, N = 694) = 0.24$, ns; or race; $\chi^2(1, N = 692) = 1.41$, ns. Participants were significantly younger than nonparticipants (mean age = 15.3 years vs. 16.1); $t(714) = 6.42$, $p < .001$. This difference may have been partially due to older adolescents tending to be detained for shorter periods; the correlation between age and number of detention days was $r = -.20$, $p < .001$.

Due to repeated placements in detention, 240 of the participants completed the questionnaire at least twice. Half of these adolescents repeated the questionnaire within a three

month time period, and data from this subset of 120 adolescents are used to evaluate scale test-retest properties. For each subject who completed a questionnaire, \$2 were placed in the Judge's Fund, a pool of unrestricted moneys used by staff either to purchase recreational supplies for youth in the facility (e.g., basketballs, art supplies) or to provide services for indigent adolescents (e.g., pay for eyeglasses or basic dental work).

Demographic Characteristics

The majority of adolescents were male (82.5%, $n = 457$); the remaining 17.5% ($n = 97$) were female. Approximately three quarters (76.5%) self-identified as Caucasian; the remaining subjects identified themselves as Native American (8.4%), Hispanic (5.8%), African American (4.0%), Asian or Pacific Islander (2.7%), or other (2.5%). Prior to detention, slightly more than half of the adolescents (56.7%) had been in school. The remainder had either dropped out (40.4%) or graduated (2.9%). Approximately one third (31.9%) had been living in households with their mother as the sole parent; 15.2% lived with a mother and stepfather, 13.2% lived with their biological mother and father. The remainder were either living with others (36.6%) or living alone (3.1%).

Assessment of Suicidal Behavior

Current suicidal ideation was assessed with four items rated for frequency of occurrence in the past week on a 4-point scale (e.g., I thought about killing myself). Current ideation was defined as one or more items occurring at least a moderate amount of time in the past week (i.e., 3 or 4). These items had been used in previous research assessing suicidal ideation in community adolescents (Lewinsohn, Rohde, & Seeley, 1996).

Lifetime thoughts of death and suicide. Subjects reported if they had ever thought about

death, wished they were dead, and thought about killing themselves or doing something that could kill them. For the first two items, subjects reported if they had experienced the thought for a long time (i.e., at least four days in a week for at least 2 hours a day). Lifetime suicidal ideation was defined as either longstanding thoughts or wishes to be dead or thoughts of killing oneself.

Lifetime suicide attempts were operationally defined as answering affirmatively to the probe, "Have you ever tried to kill yourself?" As a check of reporting reliability, agreement regarding occurrence of past suicide attempt between the two questionnaires was excellent for subjects who repeated the assessment procedures ($\kappa = .86$).

Assessment of Psychosocial Variables

Current depression was assessed with 20 items from the Beck Depression Inventory (BDI; Beck et al., 1961). The BDI item assessing suicidal ideation was not included ($\alpha = .82$, test-retest $r = .51$).

Exposure to suicide events was assessed by six items from the Suicidal Behavior Questionnaire (Smith & Crawford, 1986). Four single-item variables were created assessing suicide attempt by family member (test-retest $r = .69$), suicide by family member (test-retest $r = .52$), suicide attempt by friend (test-retest $r = .33$), and suicide by friend (test-retest $r = .45$).

Anger was assessed by three items regarding frequency of occurrence during the past four weeks. These items were previously found to be associated with suicidal ideation in young adults (Goldberg, 1981) ($\alpha = .63$, test-retest $r = .52$).

Substance use was assessed by five items measuring the frequency of use of tobacco (cigarettes and chewing tobacco), alcohol, marijuana, and other illegal drugs during the four weeks prior to detention ($\alpha = .64$, test-retest $r = .45$).

Conduct problems were assessed by nine items regarding the lifetime occurrence of conduct disorder symptoms ($\alpha = .50$, test-retest $r = .54$).

Borderline personality features were assessed by 12 items from the screener to the SCID II interview for borderline personality disorder (Spitzer et al., 1992) ($\alpha = .72$, test-retest $r = .54$). One item specifically related to suicidal behavior (Have you tried to hurt or kill yourself or threatened to do so?) was deselected.

Coping skills were assessed by 15 items developed from our previous work (Rohde, Lewinsohn, Tilson, & Seeley, 1990) ($\alpha = .67$, test-retest $r = .35$). Eight items assessed ineffective techniques (e.g., Keep away from people; $\alpha = .61$, test-retest $r = .43$) and seven assessed prosocial behavioral techniques (e.g., Do something pleasant; $\alpha = .72$, test-retest $r = .32$).

Major life events during the last month were assessed by 19 items selected from the Social Readjustment Rating Scale (Holmes & Rahe, 1967) and the Life Events Schedule (Sandler & Block, 1979) ($\alpha = .80$, test-retest $r = .41$).

Loneliness was assessed by eight items from the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980) ($\alpha = .74$, test-retest $r = .51$).

Social support was assessed by three items regarding the subject's number of close friends (test-retest $r = .42$), number of close relatives (test-retest $r = .52$), and frequency of contact with either close friends or relatives (test-retest $r = .36$; Berkman & Syme, 1979).

Self-esteem was assessed by 10 items selected from the Rosenberg Self-Esteem Scale (Rosenberg, 1965) ($\alpha = .88$, test-retest $r = .51$).

Impulsivity was assessed by 19 True-False items from the Impulsivity dimension of the Schedule for Normal and Abnormal Personality (Clark, 1992) ($\alpha = .84$, test-retest $r = .75$).

Parental supervision was assessed by nine items from the Pittsburgh Youth Study measuring amount of parental supervision and privacy in the home ($\alpha = .57$, test-retest $r = .38$).

Social desirability was assessed by ten items selected from the Crowne-Marlowe Social Desirability Scale (Crowne & Marlowe, 1960) ($\alpha = .69$, test-retest $r = .65$).

Statistical Analyses

We begin by describing the frequency of suicidal ideation and attempt in the sample, examining the degree to which demographic factors are associated with suicidal behavior. Associations of the psychosocial variables with current ideation and past suicide attempt are examined using Pearson correlations. Significant gender differences in the magnitude of the associations are examined using Fishers r-to-z transformation. Similarly, differences in the magnitude of a variable's association with current ideation versus past attempt are examined.

Variables having a significant association with current suicidal ideation or past attempt are considered for inclusion in multivariate analyses, using multiple logistic regression (MLR). MLR follows the same general principles used in linear regression but is considered more appropriate when the outcome variable is dichotomous (Hosmer & Lemshow, 1990). MLR analyses determine the degree to which variables make a unique (i.e., independent of the other variables) contribution to the prediction of suicidal behavior. The associations between variables and suicidal behavior are presented by means of the odds ratio (OR), which compares the odds of having suicidal behavior for those with the psychosocial variable to the odds of having suicidal behavior for those without the variable. An OR of 1.0 indicates no association between the variable and suicidal behavior. An OR of 2.0 for a dichotomous variable indicates that suicidal behavior occurs twice as often among those who are elevated on the psychosocial variables

compared to those who are not. For continuous variables, the OR indicates the increased likelihood of suicidal behavior given an increase of one unit in the psychosocial variable. The discrepancy between continuous and dichotomous variables makes it difficult to interpret the relative contribution of measures using different scaling properties. Therefore, MLR analyses are recomputed in which the continuous variables are dichotomized at the median (i.e., made dichotomous).

The classification ability of the MLR solution is evaluated in terms of percent correctly classified, sensitivity (proportion of true ideators or attempters identified by the MLR solution), specificity (proportion of true non-ideators or non-attempters identified by the solution), positive predictive value (PPV, proportion of true ideators or attempters among those identified by the solution as ideators or attempters), and negative predictive value (NPV, proportion of true non-ideators or non-attempters among those identified by the solution as non-ideators or non-attempters). To control for the potential impact of a social desirability response bias, MLR analyses are recomputed controlling for the influence of social desirability.

To explore the factors that might lead a delinquent adolescent thinking of suicide to actually making an attempt, we conclude the results section by examining the correlation of seven variables with suicide attempt, restricting analyses to only adolescents with a lifetime history of suicidal ideation.

Results

Frequency of Suicidal Behavior

To verify the significance of suicidal behavior as a problem in this population, information regarding the prevalence of current and lifetime suicidal ideation, and lifetime

suicide attempts, as obtained from the first questionnaire completed by a subject, are presented first. Over one third of the participants (33.7%) had thought of committing suicide at some time in their life and 14.2% reported current suicidal ideation (i.e., during the past week). Almost one fifth (19.4%) reported having made at least one past suicide attempt: 9.1% reported a single past attempt and 10.3% reported two or more attempts.

Demographic differences. Occurrences of current suicidal ideation and lifetime suicide attempt were examined as a function of the demographic variables. Female gender was the only demographic measure significantly associated with both current ideation (21.6% of females vs. 12.7% of males); $\chi^2(1, n = 555) = 5.29, p < .05$; and lifetime history of attempt (39.8% of females vs. 15.1% of males); $\chi^2(1, n = 530) = 29.84, p < .001$. One additional variable was associated with current suicidal ideation: younger age ($r = -.12, p < .01$). Two demographic variables were associated with suicide attempt: (a) having dropped out of school (23.9% of drop-outs vs. 16.8% of those in school had a past suicide attempt; $\chi^2[1, n = 530] = 3.92, p < .05$), and (b) not living with at least one biological parent prior to detention (26.9% of subjects not living with a parent vs. 14.2% of subjects living with at least one biological parent had made a past suicide attempt; $\chi^2[1, n = 521] = 12.87, p < .01$). Racial classification was not significantly associated with either current ideation or lifetime history of attempt. Given the different rates of suicidal behavior in boys and girls, subsequent analyses were computed separately by gender.

Univariate Associations of Variables with Suicidal Behavior

Pearson correlations of the psychosocial variables with current suicidal ideation and lifetime history of suicide attempt for males and females are shown in Table 1. Significant ($p < .05$) gender differences in the magnitude of the correlations with current suicidal ideation were

found for two variables: number of close relatives and frequency of contact with friends or relatives. In both instances, the variable was associated with suicidal ideation for only the males. Significant gender differences in the magnitude of the correlations with lifetime suicide attempt were found for five variables: substance use, borderline personality features, major life events, impulsivity, and social desirability. In each instance, the association of the measure with past suicide attempts was greater for females than males.

 Insert Table 1 about here

Differences in the magnitude of correlations with current ideation and past attempts were also examined using Fisher's r -to- z transformation. For males, nine variables were significantly more associated with suicidal ideation than with suicide attempts (current depression, anger, borderline personality features, major life events, loneliness, number of close friends, self-esteem, impulsivity, and social desirability) and one variable (older age) was significantly more associated with suicide attempt than ideation. For females, four variables were significantly more associated with ideation than with attempts (younger age, suicide attempt and suicide by family member, low self-esteem); one variable (suicide attempt by friend) was significantly more associated with attempt than with ideation.

Multivariate Associations of Variables with Suicidal Behavior

To examine the combined contribution of the psychosocial measures in distinguishing delinquent adolescents with current suicidal ideation, all variables with a significant univariate association with current ideation were entered into a multiple logistic regression (MLR) analysis

with backward stepwise deselection. Given the exploratory nature of these analyses, criterion for deselection was set at $p < .10$ (Wald test). Results are shown in the upper portion of Table 2.

 Insert Table 2 about here

Five variables were retained in the MLR solution for current ideation among males: greater current depression, history of suicide attempt, greater number of major life events, more loneliness, and fewer close relatives. Optimal screening characteristics for identifying current suicidal ideation in the males were as follows: sensitivity = 78.4%, specificity = 76.6%, PPV = 31.7%, NPV = 96.2%. The MLR solution correctly classified 76.8% of the males. Three measures were retained in the MLR solution for current suicidal ideation in the females: younger age, greater current depression, and impulsivity. The solution correctly classified 74.8% of the females (sensitivity = 68.4%, specificity = 76.3%, PPV = 41.9%, NPV = 90.6%).

The MLR analyses were recomputed controlling for the influence of social desirability. All of the variables in the above-mentioned solutions were simultaneously entered into an MLR solution with social desirability to predict current ideation. For the boys, four of the five variables remained significantly associated with current ideation; loneliness was no longer significant ($p = .133$). For the girls, all three variables remained significantly associated with current suicidal ideation after controlling for social desirability.

Odds ratios (and their 90% confidence intervals) from the MLR solutions are shown in the center column of Table 2. The significant continuous variables were then dichotomized at the median and the odds ratios were recomputed. These values appear in the last column of Table 2.

To illustrate interpretation of the dichotomous odds ratios using results for the girls, younger girls were more than twice as likely to report suicidal ideation compared to older girls. Currently depressed girls and girls who reported high levels of impulsivity were over three times as likely to report ideation.

Similar MLR analyses were computed for identifying delinquent youth with past suicide attempts. Three variables were retained in the MLR solution identifying past suicide attempt in males: current suicidal ideation, use of ineffective coping behaviors, and not residing with at least one biological parent prior to detention. Approximately two thirds (64.2%) of the males were correctly classified based on the MLR results (sensitivity = 65.1%, specificity = 64.1%, PPV = 24.0%, NPV = 91.3%). Recomputing the MLR analysis controlling for social desirability, ineffective coping failed to attain significance ($p = .104$).

Three variables were retained in the MLR solution identifying past suicide attempts in the females: greater number of major life events, impulsivity, and not residing with at least one biological parent. Three fourths of the girls (76.4%) were correctly classified (sensitivity = 70.6%, specificity = 80.0%, PPV = 68.6%, NPV = 81.59%). All three variables remained significant in the MLR analysis controlling for social desirability.

Associations with Suicide Attempt Among Suicidal Ideators

As an additional examination of the factors that might identify delinquent adolescents with suicidal ideation who go on to make a suicide attempt, Pearson correlations were recomputed using only adolescents who reported a lifetime history of suicidal ideation (55 girls and 160 boys). Analyses were restricted to variables proposed to be associated with suicide attempt (i.e., impulsivity, substance use, lack of parental supervision, and suicide attempt or

completion by family members or friends). For the delinquent boys with lifetime ideation, only one of the seven variables approached significance; the correlation of impulsivity with suicide attempt was $r = .14$, $p = .097$. For the delinquent girls with lifetime ideation, having a friend die by suicide was significantly associated with making an attempt ($r = .37$, $p < .05$) and a trend was found for a family member's death by suicide being associated with lower risk of the girl making an attempt ($r = -.25$, $p = .066$).

Discussion

As expected, the rates of current and lifetime suicidal ideation and past suicide attempts were elevated in this sample of delinquent adolescents in a juvenile detention facility. Rates of suicidal behavior were especially elevated among the girls. Half of the girls reported a lifetime occurrence of suicidal ideation and 40% reported having made a past suicide attempt. Overall, these adolescents appear to have rates of suicidal behavior comparable to those found in an inpatient unit or residential care facility and psychiatric care ought to be delivered accordingly.

The majority of variables were correlated with current suicidal ideation in at least one gender group. For both boys and girls, current depression was the variable most significantly associated with concurrent suicidal ideation in the multivariate analyses. For boys, stressful life events, low social support (i.e., greater loneliness, fewer close relatives), and past suicide attempt were also unique correlates. For girls, impulsivity was a unique predictor, in addition to current depression and younger age. Controlling for social desirability did not substantially change these findings.

Past suicide attempts were also associated with the majority of psychosocial measures. The only correlate of suicide attempts from the MLR analyses common to both girls and boys

was not residing with a biological parent prior to detention; this variable is discussed below. Past attempts in the boys were also associated with current suicidal ideation and the use of ineffective coping skills. Past attempts in the girls were uniquely associated with impulsivity and increased major life events, which may both be indicators of instability. The MLR results may be helpful in identifying suicide risk in a noncompliant adolescent. Otherwise, the best way of assessing past suicide attempt is to ask adolescents directly about these behaviors. Our main purpose in conducting the MLR analyses was to identify the psychosocial variables associated with suicidal behavior in delinquent adolescent.

Overall, the gender differences suggest that suicidal behavior (both ideation and attempts) in delinquent boys is more associated with depression and decreased social connection whereas suicidal behavior in delinquent girls is more strongly associated with impulsivity and instability. The fact that delinquent boys with a past suicide attempt were more likely than delinquent girls with past attempt to still have suicidal ideation suggests that suicidality in these males may be a more chronic phenomenon. This interpretation would be consistent with the less significant role of impulsivity in suicide attempts for males compared to females. These differences lead to the suggestion that gender-specific treatments and prevention interventions may be beneficial (e.g., Linehan et al., 1991). The emerging gender differences emphasize the need to consider gender differences in all research regarding adolescent suicidal behavior.

Regarding the specific hypotheses, increased rates of major life events were found to be associated with both suicidal ideation and suicide attempt. In fact, major life events was the only variable that was significantly associated with both suicidal ideation and suicide attempts in boys and girls. The multivariate findings supported our hypothesis that suicidal ideation, more so than

actual suicide attempts, represents a manifestation of severe depression. Support was not found for the hypothesis that poor coping skills are more associated with suicidal ideation than attempt. Rather than leading to suicidal ideation, the absence of effective coping may in fact act as one of the variables that predicts which boys with suicidal ideation progress to making an actual attempt. The hypothesis that low social support would be more closely associated with suicidal ideation than attempt was supported. Again, however, these associations were only noted for delinquent boys and suggest that gender specific models are necessary.

Regarding other factors that may facilitate the progression from thinking about suicide to making an attempt, the only variable to emerge for both boys and girls was not residing with a biological parent prior to detention. Adolescents in this population are generally removed from the home due to either serious family discord or greater emotional disturbance or criminal behavior by the youth. Children are often removed if sexual abuse has occurred; placement outside the home is not as common given physical abuse. Assuming future research replicates this finding, a better understanding of the reasons for placement outside the home are needed (e.g., childhood sexual abuse, which was not assessed in the present study, may represent an important risk factor for suicidal behavior in this population). It is also possible that not residing with one's parents may be associated with less monitoring by adults, which increases the opportunity for making a suicide attempt. Also consistent with our hypothesis of a dangerous setting, reduced parental supervision was associated with suicide attempt (but not ideation) in delinquent boys. Contrary to prediction, the measure of impulsivity did not appear to be more strongly associated with attempt than with ideation.

The only type of modeling behavior that emerged as significantly associated with suicide

attempt was suicidal behavior by a friend. This association was significant for boys and became significant for girls when analyses were restricted to girls with past suicidal ideation. One speculation is that suicidal behavior by family members has more often occurred in the distant past and may increase the probability for suicidal ideation, but not attempt. A suicide attempt or completed suicide by one's friend is more likely to be more recent and may act as a trigger for the delinquent adolescent actually making an attempt. We have previously found that suicide attempts by friends (but not family) act as risk factors for future suicide attempt in community adolescents (Lewinsohn, Rohde, & Seeley, 1994), although others have found that exposure to suicide by a friend is not associated with an increased risk of adolescent suicide attempt (Brent et al., 1996). The results suggest that the impact of exposure to suicidal behavior varies as a function of the person's relationship to the adolescent.

Understanding the determinants of suicidal behavior in detained adolescents has important clinical and theoretical implications. Clinically, given that past suicide attempts are the strongest predictor of future attempts, this population is very much in need of prevention efforts. Concerning future research, prospective studies of future suicidal behavior in this population (both while in detention and, more importantly, after release) are needed. Future research should also consider the value of including a non-delinquent control group to establish whether the findings are unique to this population.

The primary limitation of the current study is that all of the findings are based on self-report. Nonetheless, given the covert nature of much suicidal behavior, adolescent self-report remains the best single source of this information. Second, the questionnaire had to be as brief as possible, which resulted in some of the scales having relatively weak measures of internal

consistency. This may have increased the probability of Type II error. In addition, many statistical comparisons were made and significant results may have emerged due to chance. The representativeness of the sample represents a third limitation of the study. Specifically, the reported rates of race/ethnicity in the present study are considered suspect with a disproportionate number of subjects over-emphasizing non-Caucasian ethnicity, especially Native American heritage. The generalizability of the current findings to non-white delinquent adolescents is unknown. The seriousness of this limitation is tempered by the fact that rates of suicidal behavior among delinquents appear to be significantly higher among whites than non-whites, with the possible exception of Native Americans (e.g., Morris et al., 1995). Fourth, we were unable to examine whether suicidal behavior was associated the particular nature of criminal activity. Lastly, given the composition of this population, there were relatively few females in the study. A larger sample would have been needed to better study the suicidal behavior of delinquent girls. This is especially important, given that girls in this population appear to be at particularly elevated risk for suicidal behavior.

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Table 1

Correlations with Current Suicidal Ideation and Lifetime Suicide Attempts

Variable	r with Ideation		r with Attempt	
	Males	Females	Males	Females
Age	-.07	-.26**	.10*	.14
Current depression	.34***	.38***	.09	.24*
Anger	.26***	.18	.10*	.21*
Substance use	.03	.13	.00	.27**
Conduct problems	.15***	.16	.08	.15
Borderline features	.24***	.20*	.05	.27**
Current ideation			.19***	.11
Past suicide attempt	.19***	.11		
Suicide attempt by family	.00	.19	.07	-.06
Suicide by family member	.04	.06	.06	-.16
Suicide attempt by friend	.10*	.07	.08	-.01
Suicide by friend	.06	-.15	.11*	.11
Coping skills-behavioral	-.11*	-.06	-.07	-.09
Coping skills-ineffective	-.13**	-.19	-.13**	-.10
Major life events	.28***	.22*	.10*	.33***
Loneliness	.25***	.22*	.11*	.10
Number of close friends	-.11*	.09	-.06	-.03
Number of close relatives	-.18***	.06	-.06	-.13

Variable	\underline{r} with Ideation		\underline{r} with Attempt	
	Males	Females	Males	Females
Frequency of contact	-.15***	.14	-.09	.07
Self-esteem	-.29***	-.34***	-.09	-.07
Impulsivity	.19***	.23*	.06	.29**
Parental supervision	-.07	.10	-.10*	-.08
Social desirability	-.23***	-.20	-.10*	-.34***

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2

Multiple Logistic Regression Analyses

Gender	Variable	Original Odds Ratios (CI)	Dichotomized Odds Ratios
<u>Correlates of Current Suicidal Ideation</u>			
<u>Males</u>	BDI	1.10 (1.06-1.14)	3.41
	Past attempts	2.75 (1.44-5.28)	3.88
	Major life events	1.19 (1.08-1.30)	3.39
	Loneliness	1.07 (1.00-1.14)	3.13
	Close relatives	1.49 (1.15-1.94)	3.35
<u>Females</u>	Younger age	1.59 (1.13-2.23)	2.18
	BDI	1.11 (1.05-1.13)	3.26
	Impulsivity	1.13 (1.02-1.27)	3.70
<u>Correlates of Past Suicide Attempt</u>			
<u>Males</u>	Current ideation	3.23 (1.83-5.68)	3.21
	Ineffective coping	1.07 (1.01-1.13)	1.98
	No biological parent	2.46 (1.54-3.95)	2.54
<u>Females</u>	Major life events	1.28 (1.10-1.49)	4.60
	Impulsivity	1.15 (1.06-1.26)	4.01
	No biological parent	3.11 (1.30-7.43)	4.01