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## Childhood Attachment and Adolescent Suicide: A Stepwise Discriminant Analysis in a Case- Comparison Study

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**ABSTRACT** - The present study examined whether early attachment histories differentiated between suicidal and nonsuicidal adolescents. Employing a case-comparison design, community, nonsuicidal adolescents (comparison group;  $n = 35$ ; mean age = 14.2,  $SD = 1.9$ ) were compared to clinical adolescents (case group;  $n = 17$ ; mean age = 15.8,  $SD = 1.01$ ) on their attachment and developmental histories. Participants were recruited from an inpatient psychiatric assessment and treatment unit for adolescents at a major university hospital or the community. All participants were administered the *Youth Self Report*, *Parental Bonding Instrument* and the *Adolescent Attachment Survey*. A stepwise discriminant analyses resulted in a single function (Wilk's Lambda = .235,  $p < .001$ ) discriminating between the suicidal and nonsuicidal adolescents on attachment variables (canonical  $r = .88$ ), particularly attachment to mother (Cohen's  $d = 3.0$ ). The discriminant function resulted in an overall correct classification rate of 94.23% between the case and comparison groups. Insecure attachment (especially to mother) in childhood, particularly affectionless control and lack of care, is related to suicidality in adolescence.

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Adolescent suicide continues to be a major social and mental health problem (e.g., Nock & Kazdin, 2002). The rate of suicide among 15 to 19 year olds has tripled in most industrialized countries since 1950 (Rotheram-Borus, Walker & Frens, 1996). In his study of nine countries, Safer (1997) concluded that 10% of youth have attempted suicide. This complex phenomenon is influenced by a multitude of factors including psychological, social, developmental and other variables. Notwithstanding substantial research efforts, the nature and causes of adolescent suicide remain to be clarified. The major purpose of the present study was to further study adolescent suicidality by comparing the attachment and other developmental histories of suicidal and nonsuicidal adolescents employing discriminant analysis.

Several factors including depression, hopelessness, and helplessness have been linked to adolescent suicide (Rotheram-Borus, Walker & Ferns 1996). In addition, Hawton, O'Grady, Osborn and Cole (1982) have identified family problems such as poor communication, value conflict with parents, alienation of the adolescent from the family, as well as inadequate love, affection and lack of support provided by family members, as important factors in adolescent suicide. Van Egmond and Diekstra (1988) in a meta-analysis of 81 studies have confirmed these findings. Moreover, Grossi and Violato

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(1992) found that disturbed attachment and loss produced the most powerful separation of suicidal and nonsuicidal youths in a discriminant analysis. They interpreted their findings within attachment theory that represents a fertile soil for an approach to understanding adolescent's developmental trajectory to suicidality.

Childhood attachments seem to underlie subsequent psychological adjustment and psychopathology including suicidality (Ainsworth, 1991; Bowlby, 1969/1982; Zeanah, Boris, & Scheering, 1997). Adam, Sheldon-Keller and West (1996) studied one hundred and thirty-three adolescents in psychiatric treatment in a case comparison study that investigated the association of attachment patterns with a history of suicidal behaviors. They found that insecure attachment was related to suicidal ideation and behavior in their age group (13 to 19 year-olds). De Jong (1992) similarly found that insecure early childhood attachments are related to adolescent suicidality.

Some research has, therefore, linked adolescent suicide to attachment disruption such as insecure attachment. Nonetheless, more research is required to further explore the relationship between suicide and attachment. Accordingly, the present study was undertaken to further explore the relationship between attachment and suicide employing discriminant analyses.

## Method

### Participants

A total of 52 adolescents (mean age = 14.7 years,  $SD = 1.7$ ; range = 12-17) participated in the present study. Of these, 35 were community, nonsuicidal adolescents in the comparison group (mean age = 14.2,  $SD = 1.9$ ) who were recruited from the general population through schools, physicians' and dentists' offices. A clinical sample of 17 adolescents in the case group (mean age = 15.8,  $SD = 1.01$ ) was recruited from admissions to an inpatient psychiatric assessment and treatment unit for adolescents at a major Canadian university hospital. Staff psychiatrists diagnosed each adolescent upon admission, based on the *Diagnostic Statistical Manual IV-TR*<sup>1</sup> (DSM IV-TR; American Psychiatric Association). All participants were considered at high risk for suicide upon admission<sup>2</sup>. While they were not psychiatrically evaluated, all 35 participants in the community sample indicated on a self-report question that they had never attempted suicide or planned suicide.

There were an approximately equal number of males ( $n = 18$ ) and females ( $n = 17$ ) in the community sample. In the clinical group, there were six males (35%) and 11 females (65%). For the total sample then, 24 were male and 28 were female.

### Instruments and Procedures

The self-report measures that were used in the present study included the *Adolescent Attachment Survey* (AAS) (Genuis, Violato, Oddone-Paolucci, Robitaille & McBride, 2000), the *Parental Bonding Instrument* (PBI) (Parker, Tupling & Brown, 1979) and the *Youth Self-Report* (YSR) (Achenbach, 1991).

The AAS, which is made up of 377 items, retrospectively assesses childhood attachments and experiences prior to the age of ten. Internal consistency reliability coefficients for the eight subscales range from .82 to .94 and the research has provided evidence of validity (Oddone-Paolucci, Genuis & Violato, 1998; Genuis, Violato, Oddone-Paolucci, et al, 2000).

The PBI is a 25 item self-report measure that produces two scales: Care (degree of warm, nurturing care) and Overprotection (degree of affectionless, coercive control). There is substantial evidence of both split-half reliability (coefficients of .73 to .87) and long term (5 years) test-retest reliability ( $r = .77$ ) as well as validity evidence (Parker,

1984; Richman & Flaherty, 1987) for the PBI.

The YSR, also a self-report measure, contains 118 behavior problem items and a social competence scale (Achenbach, 1991). This assessment tool assesses current levels and types of psychopathology in adolescents. Individual scale scores (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behaviour, aggressive behaviour, and self-destructive identity problems), externalizing and internalizing scores and an overall total problem score are produced. Numerous studies have provided reliability and validity evidence for the YSR (Achenbach, 1991). Test-retest and internal consistency reliability (Cronbach's alpha coefficient) ranged from .59 to .90 on individual scales, .89 for internalizing, .89 for externalizing, and .95 for the total problem scale. Research provided evidence for content, criterion-related and some construct validity for the YSR (Achenbach, 1991).

All of the adolescents completed the AAS and YSR and the PBI as well as provided demographic data. All participants volunteered for the present study after receiving full informed consent and were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

## **Results**

### ***Between Group Differences: Sexual and Physical Abuse***

Chi-square analyses between the clinical and community samples indicated a number of differences in life history variables. The frequencies of the clinical adolescent participants experiencing physical abuse ( $\chi^2(1) = 13.2, p < .001$ ), unwanted sexual touching ( $\chi^2(1) = 18.2, p < .0001$ ), oral sex ( $\chi^2(1) = 27.2, p < .0001$ ) and sexual intercourse ( $\chi^2(1) = 28.1, p < .0001$ ), was significantly higher than the community adolescent group. In addition, the clinical group reported a higher frequency of drinking alcohol as a child than that of the community group ( $\chi^2(1) = 13.5, p < .001$ ).

### ***Between Group Differences: AAS and PBI***

Between group differences on the AAS and PBI were explored by analyses of variance (ANOVA) and effect size analyses of standardized mean differences (Cohen's  $d$ ). Parental Care, from the PBI, indicates the perception of the adolescent of their parents' attention and care towards them. The community group reported a significantly higher perception (45.87) of parental care compared to that of the clinical group's perception (33.23) of care ( $p < .0001$ ;  $d = 2.2$ ). On overprotection, the community group score (39.88) was significantly lower (31.76) than the clinical group ( $p < .0001$ ;  $d = 1.4$ ), reflecting less affectionless control than for the clinical sample. On secure attachment to mother, the community group had a much higher score (104.41) than the clinical group (73.4) ( $p < .0001$ ;  $d = 3.0$ ). Similarly, the community group reported higher scores (98.65) on secure attachment to the father than that of the clinical group (72.66) ( $p < .0001$ ;  $d = 1.7$ ). Finally, the community group total score (105.33) on secure attachment to the parental unit was significantly higher than the total score (72.27) in the clinical group ( $p < .0001$ ;  $d = 2.6$ ).

### ***Between Group Differences on the Youth Self Report***

The Youth Self Report contains items that produce eleven problem scales. The between group differences (MANOVA) indicated significant differences with the community sample showing higher levels of psychosocial adaptation on nine of the scales: (1) Withdrawn (3.49 vs 8.11),  $p < .0001$ ;  $d = 1.5$ , (2) Somatic complaints (3.09 vs 13.11),  $p < .0001$ ;  $d = 2.9$ , (3) Social problems (2.76 vs 6.23),  $p < .0001$ ;  $d = 1.4$ , (4) Thought problems (1.65 vs 7.12),  $p < .0001$ ;  $d = 1.8$ , (5) Attention problems (4.50 vs 9.18),  $p <$

.0001;  $d = 1.3$ , (6) Delinquency (3.74 vs 13.53),  $p < .0001$ ;  $d = 2.0$ , (7) Aggressive behavior (9.35 vs 22.65),  $p < .0001$ ;  $d = 4.3$ , (8) Internalizing total (12.26 vs 25.29),  $p < .0001$ ;  $d = 1.3$ , and (9) Self-destructive identity problems (3.29 vs 18.41),  $p < .005$ ;  $d = 4.7$ . The difference on two scales, depression (6.01 vs 8.94,  $p < .122$ ;  $d = .49$ ) and the externalizing total (13.09 vs 15.29,  $p < .415$ ;  $d = .28$ ), were nonsignificant and produced small effect sizes (Cohen, 1988).

### Discriminant Analyses

Table 1

*Discriminant Function Analysis of Attachment and Suicidality Between Suicidal and Community Adolescents (N=52)*

*Part A: Correlation with Discriminant Function*

Variable	Correlation
Maternal Attachment	.85
Parental Attachment	.52
PBI- Care	.50
Father Attachment	.36
Parental Involvement	.21
PBI- Overprotection	.19

*Part B: Canonical Discriminant Functions*

Eigenvalue	Canonical Correlation	Wilks' Lambda	Chi-square	df	Significance
3.261	.8748	.2347	63.780	2	< .0001

*Part C: Classification Results*

Membership Actual Group	No. of Cases	Predicted Group	
		Suicide	Nonsuicide
Clinical- Suicide	17	15 88.2%	2 11.8%
Community- Nonsuicide	35	1 2.9%	34 97.1%

Percent of cases correctly classified = 94.23%

To determine the linear combination of variables that optimally differentiated between the suicide and nonsuicide groups, stepwise discriminant analysis was performed on the data. A single discriminant function was formed that was found to separate the suicidal group from the nonsuicidal group (Wilks' Lambda = .235,  $df = 2$ ,  $p < .0001$ ). The

discriminant function produced a large canonical correlation of .88 thus accounting for 77% of the variance in suicide. The largest correlation with the discriminant function was maternal attachment ( $r = .85$ ) with PBI – overprotection producing the smallest correlation of  $r = .19$  (Table 1 – Part A). The correlations for the remaining attachment measures (parental attachment, care, father attachment, parental involvement) were intermediate between these two. Compared to the nonsuicidal group then, more of the suicidal group had insecure maternal, parental and paternal attachment, perceived their parents as less caring, less involved and overprotective (Table 1 – Part A).

Based on the discriminant analysis and resulting model, 94.23% of the adolescents were correctly classified as either suicidal or nonsuicidal (comparison group). More specifically, 88% of the adolescents were correctly classified into the case group (suicidal) and 97% were correctly classified into the comparison group (nonsuicidal) (Table 1 – Part B).

## Discussion

The main findings of the present study are: (1) Adolescents who have insecure attachments – particularly to mother – are at risk for suicidality, (2) The suicidal adolescent perceived their parents to be more overprotective and less caring of them than did the community sample, and (3) Insecurely attached adolescents generally indicated more psychopathology than community sample adolescents.

The overall results support the contention that childhood attachment, particularly to mother, is central to the development of psychological adjustment in adolescence and the development of suicidality. These results are in congruence with the contentions of Bowlby (1969/1982), Ainsworth (1991) and others (e.g., Grossman & Grossman, 1991).

There were clear differences between the community and clinical samples on their developmental experiences and their current psychological functioning. The suicidal group reported a higher frequency of physical and sexual abuse than did the community group who reported that they had had no exposure to physical and sexual abuse at all.

*Differences in Perception of Attachment*

The perceptions of attachment patterns of the suicidal adolescents were significantly different than those of the community group. Indeed, a single discriminant function composed of attachment variables resulted in a powerful discrimination between suicidal and nonsuicidal adolescents. Based on this function we were able to correctly classify nearly all (94%) of the adolescents. The effect sizes were also very large for the attachment variables ( $d > 1.0$ ; Cohen, 1988), particularly attachment to mother. The clinical group found their parents to be less caring and more overprotective than did the community group. These results are in concordance with data and theory of insecure attachment (e.g., Rosenstein & Horowitz, 1996).

There were substantial differences on the YSR between the nonsuicidal and suicidal groups. As for attachment, the effect sizes were very large particularly for self-destructive identity problems as might be expected, as this is in accordance to the suicidality of the adolescents. The clinical, suicidal sample was significantly more withdrawn, had somatic complaints, social, attention and thought problems, delinquency and aggressive behavior than did the community sample. The internalizing total from the YSR was higher for the clinical compared to the community group. The externalizing total differences between the two groups were nonsignificant, supporting the contention that insecure attachment works from an internal working model that can eventually replace the actual external presence of the caregiver (Crittenden & Ainsworth, 1989).

There was no significant difference between the two groups on the Depression subscale of the YSR. While it is commonly associated with suicide, it is probably not a causal

factor (Violato, Raab & Grossi, 1996). The results of the present study support this view that depression may not be a "cause" of suicide but may rather be a comorbid variable (Chew & McLeary, 1994).

The limitations of the present study include a relatively small clinical sample (17) with a somewhat imbalanced gender composition (males = 6, females = 11) and the fact that it was a retrospective group-comparison type study. Prospective longitudinal designs should be employed in the future to examine long term effects of securely and insecurely attached individuals and their patterns of adaptation including possible suicidality.

Another limitation is the lack of specificity between the suicidal (as determined by psychiatric diagnosis upon admission) and the non-suicidal (as determined by self-report) samples. It may be that the differences are due to general psychopathology of the hospitalized psychiatric sample versus the community sample. Previous research (e.g., Grossi & Violato, 1992) with psychiatric suicidal and psychiatric non-suicidal patients, however, is in concordance with our current findings. Nevertheless, future research should include all three groups for comparisons: psychiatric suicidal, psychiatric non-suicidal and community samples.

As we found in the present study, the suicidal adolescents who did not feel cared for but experienced affectionless control (overprotection) by their parents were at risk for suicidality. While the causal interactions from disrupted childhood attachments to adolescent adaptation remain to be clarified, the present results support the theory of disrupted attachment as precursors to suicidal outcomes.

### Footnotes

1. In addition to suicidality, the following diagnoses were present in the sample: Post Traumatic Stress Disorder, Dysthymia, Conduct Disorder, Attention Deficit Disorder, Oppositional Defiant Disorder, Substance Abuse, Mania, Anxiety, Anorexia, Major Depressive Disorder. Some patients had more than one disorder. Exclusion criteria included diagnosis of psychosis or organic brain or central nervous system disorders.

2. One participant successfully completed suicide during the course of this study that had 18 original patients in it.

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