

Personality Subtypes of Adolescents Who Attempt Suicide

Dorthie Cross, MA,* Drew Westen, PhD,* and Bekh Bradley, PhD†‡

Abstract: Research suggests that personality pathology is shared among a considerable portion of adolescents presenting suicidal behavior. Furthermore, heterogeneity of personality within this population suggests a need to tease apart different types of attempters. The goal of this study was to identify the personality subtypes of adolescents who attempt suicide. We analyzed data on 266 adolescents, ages 13 to 18 years, with a history of at least one suicide attempt who were selected by treating clinicians for having at least some degree of personality problems. We used a Q-factor analysis to identify subtypes based on the Shedler-Westen Assessment Procedure-II for Adolescents (a 200-item measure of personality pathology used by clinically experienced observers). We derived six subtypes: Externalizing, Internalizing, Emotionally dysregulated, High functioning, Narcissistic, and Immature. The subtypes differed on measures of adaptive functioning, axis I and II pathology, and etiology. Adolescents who attempt suicide constitute a heterogeneous group, and they vary meaningfully on a measure of personality pathology. Interventions targeting suicidal behaviors in adolescents should consider individual differences.

Key Words: Adolescent, suicide, personality, Shedler-Westen Assessment Procedure 200-item Q-sort for Adolescents, Q-factor analysis.

(*J Nerv Ment Dis* 2011;199: 750–756)

Suicide is the third leading cause of death for adolescents and young adults in the United States (Anderson and Smith, 2003). Although completed suicide is rare among adolescents—roughly 12 and 14.2 per 100,000 for girls and boys, respectively—as many as 2% to 12% of adolescents attempt suicide (Pelkonen and Martunnen, 2003). Studies of suicidal behavior generally address what distinguishes suicidal individuals from their nonsuicidal peers. The goal of the present study, in contrast, is to identify what makes adolescents who attempt suicide different from one another.

Previous studies focus on three categories: demographics, diagnosis, and etiology. In general, older, white, and female adolescents are more likely to attempt suicide, although men are 6 times more likely to actually complete suicide (Allison et al., 2001; Anderson and Smith, 2003; Blum et al., 2000; Pelkonen and Martunnen, 2003). The most common diagnostic risk factors for suicide attempt are depression and substance abuse (Martunnen et al., 1991; Martunnen and Pelkonen, 2000). Regarding etiology, adolescents who attempt suicide experience more childhood physical and sexual abuse (Violato and Arato, 2004), greater exposure to family violence (Reinhertz et al., 1995), and early loss or separation from parental figures (Grossi and Violato, 1992). Although previous findings are informative, the field would benefit by going beyond variable predictors of suicidal behavior and instead focus on creating a three-dimensional profile of an adolescent at risk.

*Department of Psychology, Emory University, Atlanta, GA; †Atlanta VA Medical Center, Atlanta, GA; and ‡Department of Psychiatry and Behavioral Sciences, Emory University School of Medicine, Atlanta, GA.

Send reprint requests to Dorthie Cross, MA, Department of Psychology, Emory University, 36 Eagle Row, Atlanta, GA 30322. E-mail: dortigo@emory.edu.

Copyright © 2011 by Lippincott Williams & Wilkins
ISSN: 0022-3018/11/19910-0750
DOI: 10.1097/NMD.0b013e31822fcd38

Personality and Suicide in Adolescents

A first step in creating this richer profile is to focus on personality. Personality disorders (PD) as a construct may be controversial when studying youth whose personalities may be in flux; however, studies show that behavioral and emotional problems in childhood predict PD in adolescence, which, in turn, predicts adult maladjustment and risk for suicide attempt (Bernstein et al., 1996; Johnson et al., 1999), suggesting relative stability of personality even in youth. Adolescents with a PD are at greater risk of developing many of the problems associated with suicidal behavior, including depression and substance abuse (Brent et al., 1994). Moreover, according to a recent review of risk factors, as much as 29% to 32% of adolescents who complete suicide may be diagnosed with a PD (Pelkonen and Martunnen, 2003). Personality affects how a person manages stress and even increases exposure to stressors (Bolger and Zuckerman, 1995). A decision to attempt suicide, an extreme response to stress, may be moderated partly by an individual's personality.

Many studies find an association between PDs and adolescent suicide (Brent et al., 1993, 1994; Cheng et al., 1997; McManus et al., 1984; Portzky et al., 2005). Adolescents who complete suicide are more likely to have a PD, particularly clusters B and C (Brent et al., 1993). Although risks for attempt and completion may vary, personality is implicated for both. A recent review of literature addressing the heritability of suicidality suggests that both attempt and completion are heritable and constitute a single spectrum of risk (Brent and Mann, 2005). The same review found that impulsive aggression, and possibly neuroticism, may be part of the familial risk. Personality appears to be related to adolescent suicidal behavior, and suicidal behavior itself is inherited, in part, with aspects of personality.

Subtyping Personality

Suicide research finds notable heterogeneity among attempters. For example, both internalizing and externalizing pathology are separate risk factors for attempt and are themselves characterized by distinct relationships with other risk factors. Lehnert et al. (1994) found that hopelessness and depression were only risk factors for internalizing, whereas poor impulse control was a risk only for externalizing adolescents. Other studies report not only internalizing and externalizing types of attempters but also anxious types and socially detached types (Allan et al., 1998; Hull-Banks et al., 2004; Peck, 1981). These differences reflect the distinct personality subtypes of suicidal adolescents.

Studies of adult suicide report personality subtypes within samples of adult attempters and completers. Using cluster analysis, one study identified six types of adult attempters—neurotic/introverted, two close-to-normal, antisocial, anxious, and introverted and detached—and another found four clusters—antisocial, histrionic-narcissistic, and two avoidant clusters (Ellis et al., 1996; Engström et al., 1996). Using Q-factor analysis, another study found six types—internalizing, emotionally dysregulated, dependent, hostile/isolated, psychopathic, and anxious/somatizing (Ortigo et al., 2009).

The goal of the present study is to extend these findings to the adolescent literature by identifying personality subtypes of adolescent attempters using a clinician-rated measure of personality pathology, the Shedler-Westen Assessment Procedure 200-item Q-sort for Adolescents (SWAP-II-A), with a statistical procedure for identifying subtypes, Q-factor analysis. Because suicide attempters constitute a

heterogeneous group, using Q-factor analysis with a relatively comprehensive personality item set may prove useful in teasing apart different types of attempters. We will compare derived subtypes based on several dimensions—axis I and II pathology, adaptive functioning, and etiology. We hypothesized that a single-factor solution will not best fit the data, that at least two subtypes will emerge and will be characterized by internalizing and externalizing pathology, separately, and that these subtypes will vary on axis I and II disorders and on adaptive functioning and etiology.

METHODS

Sample

We obtained adolescent patient data using a practice network approach to taxonomy, recruiting psychiatrists and psychologists with at least 3 years postlicensure experience from membership rosters of the American Academy of Child and Adolescent Psychiatry and the American Psychological Association. For additional details on the sampling procedure and the rationale for using clinicians as informants in basic science research, see Westen et al. (2003) and DeFife et al. (2010). DeFife et al. (2010) demonstrated that clinician-report and self-report are significantly positively correlated and that clinician-report data are highly correlated with data obtained via structured interview by an independent assessor. In addition, other studies have been published using data on which the current study is based and address separate topics, such as eating disorders and antisocial personality (Blagov and Westen, 2008; DiLallo et al., 2009; Jones and Westen, 2010; Thompson-Brenner et al., 2008).

Procedure

Eligible clinicians received invitations to participate in a study of personality pathology in adolescents. Approximately one third of the clinicians contacted participated in the research, for a total of 950 participants. Participating clinicians received instructions to complete several measures, including the SWAP-II-A; measures of current axis II symptoms; a demographic, diagnostic, developmental, and family history questionnaire; and additional questionnaires measuring personality and symptoms. To obtain a representative sample, we stratified based on sex, age, and race. For the primary analyses, we selected patients who had a history of suicide attempt ($n = 267$) from the broader sample, although some secondary analyses include both the attempters and nonattempters.

Participating clinicians provided data on a randomly selected adolescent patient (operationalized as “the last patient you saw last week before completing this form who meets study criteria”) currently in treatment of “enduring maladaptive patterns of thought, feeling, motivation, or behavior—that is personality.” We did not ask clinicians to select a patient with any particular diagnosis. We solicited data on one patient per clinician to minimize biases resulting from rater-dependent variance. Clinicians provided no identifying information on the patient and could only use information already available to them from their contacts with the patient so that data collection would not compromise patient confidentiality or interfere with ongoing clinical work.

Measures

Shedler-Westen Assessment Procedure 200-Item Q-Sort for Adolescents

The SWAP-II-A is a Q-sort instrument for assessing adolescent personality pathology designed for use by skilled clinical observers. The SWAP-II-A includes 200 statements regarding aspects of adolescent personality, phrased in common clinical language, and uses a fixed distribution with eight categories. It requires that clinicians assign a specified number of descriptors, printed on index cards, to eight

separate piles. Pile 7 contains the eight most descriptive items, pile 6 has 10 cards that are the next most descriptive, and so on. The lowest pile holds the 100 remaining cards that have no descriptive value for the patient. Therefore, the procedure yields a numeric score from 0 to 7 for each of the 200 personality-descriptive statements. This method is designed to maximize reliability and minimize error variance (Block, 1978).

Clinical Data Form—Adolescent Version

The Clinical Data Form—Adolescent Version (CDF-A) assesses relevant patient variables including demographics, diagnoses, disorder etiology, and developmental history. Clinicians first provided demographic information about themselves (number of years in practice, theoretical orientation, work setting) and their patients. Clinicians then rated the patient’s adaptive functioning on variables such as school functioning and reported relevant etiological details such as history of suicide attempts, physical and sexual abuse, and family stability. Axis I diagnoses and suicide attempt history were rated as present/absent by the treating clinician.

Using the CDF-A, we created two aggregated variables. Global externalizing pathology, an aggregation of standardized means on measures of arrest, violent crime, stealing, lying, truancy, and drug use; global school functioning, an aggregation of standardized means on items relating to school functioning; and global adaptive functioning, an aggregation of standardized means of the *DSM-IV-R* global adaptive functioning ratings, personality functioning, quality of peer relationships, number of confidants, and school functioning.

Axis II Checklist

This measure presents clinicians with a checklist of all criteria currently included on axis II for all disorders; the items are randomly ordered so that they can rate each criterion as present or absent. *DSM-IV* decision rules were then used to assign diagnoses.

Data Analysis

First, to identify the personality subtypes of these adolescents, we selected patients with a history of at least one suicide attempt and Q-factor analyzed SWAP-II-A profiles for the group. Q-factor analysis is also called inverted factor analysis because it aggregates patients rather than variables, identifying people with similar profiles across a set of items instead of items with similar content across cases. Therefore, the goal of Q-factor analysis in this study is to identify groups of adolescent attempters with shared personality characteristics that distinguish them from other adolescents who have attempted suicide.

Second, to validate subtypes that emerged, we compared them across relevant axis I and axis II pathology, adaptive functioning, and etiology. Third, to assess the incremental validity of these subtypes, we predicted global adaptive functioning and suicide lethality using hierarchical multiple regression, entering relevant axis I and axis II disorders into the model in step 1 and personality subtype factor scores in step 2. Factor scores are in terms of standard deviations above the average descriptive capacity of other SWAP-II-A items for that subtype. Finally, we predicted the presence/absence of suicide attempt using the broader sample ($N = 949$), not just suicide attempters, using logistic regression.

RESULTS

Characteristics of Patients With a History of Suicide Attempt

From the broader sample, we selected patients who had a history of suicide attempt ($N = 267$). Of these patients, 207 were white,

21 were African-American, 17 were Hispanic, 10 were Asian, and 11 were of other races. The sample consisted of 189 female patients and 77 male patients, mirroring reported sex differences. The mean age was 15.8 (1.5) years.

Q-Factor Extraction and Subtype Descriptions

To perform the Q-factor analysis, we transposed SWAP-II-A items and participants in the data set (*i.e.*, factoring cases over items) so that identified groups represented types of people, rather than groupings of items. We extracted factors using the Unweighted Least Squares and used a Promax (*i.e.*, oblique) rotation with a kappa value of 2. We used an oblique rotation to mirror natural blending of personality traits, allowing any one participant to load with varying degree onto any Q-factor.

Based on the amount of variance obtained with additional factors, we limited the extraction to seven Q-factors, representing seven types of adolescents who attempt suicide; however, because the last Q-factor was too small to be stable and interpretable (*i.e.*, only five individuals loaded with $r \geq 0.25$ onto this factor), we retained only the first six factors and based further analyses on them alone. The Q-factors are Externalizing, Internalizing, Emotionally dysregulated, High functioning, Narcissistic, and Immature. Table 1 displays the eight most descriptive SWAP-II-A items for each Q-factor. The top eight items for each Q-factor represent items that clinicians ranked as most descriptive for adolescents in those groups.

Q-Factor Validation

A valid taxonomy should show that Q-factors correlate with external variables that distinguish groups (Shedler and Westen, 1998). We correlated Q-factors with relevant axis I and axis II disorders, measures of etiology, and adaptive functioning. All reported statistics are based on two-tailed tests and are significant ($p < 0.05$) unless otherwise noted. Axis I disorders were analyzed categorically (*i.e.*, indicated as present/absent by the treating clinician), and all other variables were analyzed continuously.

The externalizing subtype ($n = 77$) was characterized by externalizing, but not internalizing, disorders. Specifically, this subtype was correlated positively with oppositional defiant disorder (ODD; $r = 0.49$), attention-deficit/hyperactivity disorder (ADHD; $r = 0.21$), substance use disorder (SUD; $r = 0.20$), conduct disorder (CD; $r = 0.19$), and antisocial personality disorder (APD; $r = 0.19$) but was correlated negatively with generalized anxiety disorder (GAD; $r = -0.17$) and major depressive disorder (MDD; $r = -0.15$). This subtype was also correlated positively with externalizing pathology (*e.g.*, arrest, violent crime, stealing; $r = 0.52$), attachment disruption ($r = 0.22$) and physical abuse ($r = 0.14$) and negatively with school functioning ($r = -0.41$).

The internalizing subtype ($n = 61$) was markedly different from the previous subtype and was characterized only by internalizing pathology. This subtype was correlated positively with MDD ($r = 0.22$) and avoidant personality disorder (AVPD; $r = 0.23$) but was negatively correlated with CD ($r = -0.25$), ODD ($r = -0.17$), ADHD ($r = -0.18$), APD ($r = -0.13$), and narcissistic personality disorder (NPD; $r = -0.26$). Furthermore, this subtype is negatively associated with externalizing pathology ($r = -0.36$), history of physical abuse ($r = -0.13$), and attachment disruption ($r = -0.13$). Clearly, adolescents comprising the first two subtypes share a history of suicide attempt but little else.

The next subtype, emotionally dysregulated ($n = 37$), is related to both internalizing and externalizing pathology. This subtype is positively correlated with MDD ($r = 0.12$) and substance abuse ($r = 0.15$), as well as with borderline personality disorder (BPD; $r = 0.44$), externalizing pathology ($r = 0.18$) and history of sexual abuse ($r = 0.27$). This subtype is also negatively correlated with school functioning ($r = -0.32$).

TABLE 1. Most Descriptive SWAP-II-A Items for Each Q-Factor

	Factor Score
Externalizing	
Is rebellious or defiant toward authority figures	3.4
Tends to be angry or hostile	3.0
Tends to act impulsively	2.8
Is prone to intense anger	2.6
Tends to blame own failures or shortcomings on other people or circumstances	2.6
Tends to be unreliable and irresponsible	2.5
Attempts to avoid feeling helpless or depressed by becoming angry instead	2.3
Appears impervious to consequences	2.2
Internalizing	
Tends to feel unhappy, depressed, or despondent	3.3
Tends to feel s/he is inadequate, inferior, or a failure	3.2
Is prone to painful feelings of emptiness	2.5
Tends to feel like an outcast or outsider	2.4
Tends to feel life has no meaning	2.4
Tends to be shy or self-conscious in social situations	2.2
Tends to feel listless, fatigued, or lacking in energy	2.2
Tends to feel helpless	2.2
Emotionally dysregulated	
Tends to become attached quickly or intensely	3.9
Relationships tend to be unstable, chaotic, and rapidly changing	2.8
Is unable to soothe or comfort him/herself without the help of another person	2.7
Tends to act impulsively	2.5
Tends to be needy or dependent	2.5
Lacks a stable sense of who s/he is	2.5
Emotions tend to spiral out of control	2.2
Tends to fear s/he will be rejected or abandoned	2.2
High functioning	
Is articulate	3.6
Tends to be liked by other people	3.1
Has a good sense of humor	3.0
Is empathic	2.6
Enjoys challenges	2.5
Has moral and ethical standards and strives to live up to them	2.4
Tends to be conscientious and responsible	2.4
Is able to use his/her talents, abilities, and energy effectively and productively	2.2
Narcissistic	
When upset, has trouble perceiving both positive and negative qualities in the same person at the same time	2.7
Tends to have extreme reactions to perceived slights or criticism	2.6
Is simultaneously needy of and rejecting toward others	2.3
Tends to feel misunderstood, mistreated, or victimized	2.3
Appears to feel privileged and entitled	2.2
Tends to be controlling	2.2
Tends to be critical of others	2.2
Immature	
Tends to be passive and unassertive	3.1
Seems childish for his/her age	2.9
Has little psychological insight into own motives, behavior, and others	2.8
Seems naïve or innocent	2.8
Lacks close friendships and relationships	2.4
Tends to express anger in passive and indirect ways	2.3
Lacks social skills	2.3

SWAP-II-A indicates Shedler-Westen Assessment Procedure 200-item Q-sort for Adolescents.

The high functioning subtype ($n = 37$), although similar to the internalizing subtype, is characterized more by anxiety. This subtype is correlated positively with MDD ($r = 0.18$) and GAD ($r = 0.22$) and school functioning ($r = 0.39$). This subtype is negatively correlated with CD ($r = -0.24$), ODD ($r = -0.37$), ADHD ($r = -0.12$), APD ($r = -0.18$), BPD ($r = -0.15$), NPD ($r = -0.13$), externalizing pathology ($r = -0.45$), and physical abuse ($r = -0.22$) and attachment disruption ($r = -0.26$). The most descriptive items on the SWAP-II-A for this subtype include only healthy items (e.g., tends to be conscientious and responsible), although the next most descriptive item set includes feelings of guilt and anxiety.

The remaining subtypes, narcissistic ($n = 12$) and immature ($n = 10$), although relatively small, vary meaningfully from the other subtypes. The narcissistic subtype is positively correlated with NPD ($r = 0.17$), as well as with school functioning ($r = 0.27$). This subtype is negatively correlated with CD ($r = -0.16$), SUD ($r = -0.14$), and externalizing pathology ($r = -0.16$). Although similar to the high functioning subtype, this subtype is characterized by less internalization and more by narcissism.

The final subtype, immature, is characterized by positive correlations with GAD ($r = 0.13$), schizoid personality disorder (SPD; $r = 0.12$), and AVPD ($r = 0.23$). Membership in this subtype is also negatively correlated with SUD ($r = -0.20$), BPD ($r = -0.25$), externalizing pathology ($r = -0.19$), and history of sexual abuse ($r = -0.13$).

An analysis of age revealed significant group differences; $F(5,232) = 5.89$. The externalizing subtype was significantly younger (mean [SD] age, 15.07 [1.42] years) than the internalizing (15.97 [1.47] years; $t = 3.64$, $d = 0.62$), emotionally dysregulated (15.92 [1.36] years; $t = 3.14$, $d = 0.60$), high functioning (16.32 [1.22] years; $t = 4.59$, $d = 0.91$), and narcissistic subtypes (16.27 [1.08] years; $t = 2.80$, $d = 0.86$) but was not different from the immature subtype (15.75 [1.04] years; $t = 1.47$, $d = 0.49$).

In addition, the observed percentage of males in each subtype differed significantly from the expected values; $\chi^2(5) = 22.97$. The expected percentage of men in each subtype was 29%, based on the overall percentage of men in the sample, but the observed values suggest an overrepresentation of men in the externalizing (44%) and immature subtypes (70%), as well as an overrepresentation of women in the emotionally dysregulated (95%) and narcissistic subtypes (92%).

Incremental Validity and Predictive Utility of Subtypes

We conducted hierarchical multiple regression analyses, comparing the utility of the subtypes to relevant axis I and II disorders in predicting Global Adaptive Functioning and suicide lethality (as rated by the treating clinician). In the first analysis to predict Global Adaptive Functioning, we entered categorical axis I disorders and dimensional axis II disorders together in the first step and added the Q-factor dimensional scores for each of the six subtypes in the second step. The axis I and axis II disorders chosen are the same as those analyzed in the previous section. We centered continuous predictor variables (i.e., number of axis II symptoms and Q-factor scores) at their mean for the suicidal subsample to address multicollinearity.

In the first step, DSM diagnoses accounted for 24% of the variance in Global Adaptive Functioning; however, including Q-factors into the model accounted for an additional 25% of the variance (Table 2). In particular, the emotionally dysregulated, high functioning, and immature subtypes contributed significant variance in the final step. In addition, GAD, SUD, and NPD remained significant.

We followed the same procedure for the hierarchical regression to predict attempt lethality. DSM diagnoses accounted for 6% of the variance in lethality. Including the Q-factors into the model, however,

accounted for an additional 6% of the variance (Table 3). With the Q-factors included, the externalizing and high functioning subtypes significantly predicted less lethal attempts.

Finally, we used bivariate logistic regression to predict the presence/absence of suicide attempt history for the entire sample ($N = 949$) by degree of match to the six Q-factors. We correlated individual SWAP-II-A profiles with Bartlett scores for each of the six Q-factors. Bartlett scores indicate an item's importance to the overall factor. We used the degree of match of individual SWAP-II-A profiles to the Bartlett Scores as the predictor in the regression. The Q-factors significantly explained 35% of the variance in group membership; $\chi^2(6) = 262.35$. The degree of match to the internalizing (Wald $\chi^2 = 32.47$, OR = 13.74) and emotionally dysregulated (Wald $\chi^2 = 71.89$, OR = 83.89) subtypes, in particular, significantly predicted a history of suicide attempt. Conversely, the degree of match to the externalizing (Wald $\chi^2 = 14.24$, OR = 0.17), high functioning (Wald $\chi^2 = 25.79$, OR = 0.07), and immature (Wald $\chi^2 = 7.82$, OR = 0.52) subtypes

TABLE 2. Hierarchical Regression to Predict Global Adaptive Functioning

	R^2	ΔR^2	F_{change}
Model 1—DSM Diagnoses	0.24	0.24	8.08***
Model 2—Subtypes	0.50	0.25	20.64***
Model 1 ($df = 10, 253$)	β	SE	t
MDD	-0.01	0.07	0.08
GAD	0.01	0.10	0.08
SUD	-0.12	0.07	1.99*
ODD	-0.14	0.07	2.49**
CD	0.02	0.10	0.30
APD	-0.28	0.02	3.76***
BPD	-0.15	0.02	2.23*
NPD	0.17	0.01	2.65***
AVPD	-0.06	0.02	-0.95
SPD	-0.18	0.02	2.75**
Model 2 ($df = 6, 247$)	β	SE	t
MDD	-0.05	0.06	1.04
GAD	-0.07	0.08	2.48**
SUD	-0.13	0.06	2.48
ODD	-0.04	0.06	0.66
CD	0.01	0.09	0.24
APD	-0.07	0.02	0.89
BPD	-0.01	0.02	-0.19
NPD	0.13	0.02	1.95*
AVPD	0.05	0.02	0.74
SPD	-0.09	0.02	1.46
Externalizing	0.18	0.01	0.07
Internalizing	-0.11	0.16	1.85
Emotionally dysregulated	-0.25	0.17	4.07***
High functioning	0.58	0.19	7.90***
Narcissistic	0.05	0.20	0.79
Immature	0.18	-0.13	-0.233*

* $p < 0.05$.
 ** $p < 0.01$.
 *** $p < 0.001$.

APD indicates antisocial personality disorder; AVPD, avoidant personality disorder; BPD, borderline personality disorder; CD, conduct disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; NPD, narcissistic personality disorder; ODD, oppositional defiant disorder; SPD, schizoid personality disorder; SUD, substance use disorder.

TABLE 3. Hierarchical Regression to Predict Severity of Suicide Attempt

	R^2	ΔR^2	F_{change}
Model 1—DSM Diagnoses	0.06	0.06	1.50
Model 2—Subtypes	0.12	0.06	2.96*
Model 1 (df = 10, 251)			
	β	SE	t
MDD	-0.01	0.15	-0.20
GAD	0.05	0.22	0.74
SUD	0.12	0.17	1.79
ODD	-0.003	0.16	-0.05
CD	0.06	0.23	0.93
APD	0.02	0.05	0.20
BPD	0.14	0.04	1.93
NPD	-0.02	0.03	-0.27
AVPD	-0.01	0.04	-0.18
SPD	0.05	0.05	0.70
Model 2 (df = 6, 245)			
	β	SE	t
MDD	<0.001	0.15	<0.001
GAD	0.06	0.22	0.95
SUD	0.13	0.17	1.91
ODD	0.09	0.17	1.24
CD	0.02	0.23	0.35
APD	0.11	0.06	1.08
BPD	0.09	0.04	0.98
NPD	-0.01	0.04	-0.16
AVPD	-0.07	0.04	-0.91
SPD	0.02	0.06	0.19
Externalizing	-0.43	0.47	-4.02***
Internalizing	-0.05	0.42	-0.63
Emotionally dysregulated	0.06	0.46	0.80
High functioning	-0.25	0.51	-2.52**
Narcissistic	-0.02	0.56	-0.21
Immature	-0.03	0.47	-0.47

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

APD indicates antisocial personality disorder; AVPD, avoidant personality disorder; BPD, borderline personality disorder; CD, conduct disorder; GAD, generalized anxiety disorder; MDD, major depressive disorder; NPD, narcissistic personality disorder; ODD, oppositional defiant disorder; SPD, schizoid personality disorder; SUD, substance use disorder.

negatively predicted a history suicide attempt. The narcissistic subtype (Wald $\chi^2 = 0.43$, OR = 0.70) did not significantly predict in either direction.

DISCUSSION

The focus on single-variable predictors of suicide has yielded a long list of risk factors, which, although useful, may obscure the complexity of individuals who attempt to end their lives. Depression, substance abuse, physical and sexual abuse, attachment disruption, and particular personality characteristics (e.g., impulsivity or neuroticism) are all markers for risk; however, these markers do not apply, nor can they apply to all suicidal adolescents. Working within the assumption that adolescents who attempt suicide constitute a diverse group, we found six distinct subtypes of attempters. These subtypes replicated previous findings from three studies of types of suicidal adults, which, as a whole, report clusters or subtypes similar to each of

the current subtypes (Ellis et al., 1996; Engström et al., 1996; Ortigo et al., 2009).

The first and largest group of adolescents, the externalizing subtype, replicated findings on the risk associated with substance abuse, attachment disruption, and childhood physical abuse (Martunnen et al., 1991; Violato and Arato, 2004). The relatively large portion of men in this group also replicates findings on increased substance abuse among male attempters, and the significantly younger age of this group replicates findings that externalizing problems are more common among younger attempters (Shaffer and Fisher, 1981; Shaffer et al., 1991). Although substance abuse is typically associated with increased lethality of attempt (Shaffer and Fisher, 1981), we found that this subtype was related to less lethal suicide attempts, which may be partially explained by the younger age of this group (Pelkonen and Martunnen, 2003).

The internalizing subtype reflects a substantial body of literature, showing the risk of suicide associated with mood disorders, independent of other factors like substance abuse (Martunnen et al., 1991). This group was characterized by depression, avoidance, and hopelessness, as well as by a predominantly female sex composition, reflecting the higher prevalence of mood disorders among female attempters (Shaffer et al., 1996).

The emotionally dysregulated subtype replicates findings on the risks associated with childhood sexual abuse (Violato and Arato, 2004), school problems (Pelkonen and Martunnen, 2003), borderline personality pathology (Martunnen and Pelkonen, 2000), and substance abuse (Brent et al., 1994), as well as the increased risk of comorbid mood and SUDs (Brent et al., 1993). The degree of match to this subtype was the most predictive of a history of suicide attempt, suggesting that adolescents fitting this description should be considered at very high risk. Given the correlates, it is reasonable to hypothesize that this subtype may represent adolescents who are later diagnosed as having BPD. The relationships between this Q-factor and clinician-reported symptoms of BPD certainly support this hypothesis, but it should be cautioned that emotional dysregulation is an underlying feature of many psychiatric disorders (Jones and Westen, 2010; Powers and Westen, 2009; Thompson-Brenner et al., 2008).

Unlike the previous subtype, which represents obviously at-risk adolescents, high-functioning adolescents seem healthy and do not experience most of the risk factors associated with suicide. These adolescents may be perfectionistic, experiencing guilt and anxiety, similar to anxious adolescents described by Mattison (1988) and Allan et al. (1998), and their attempts tend to be less lethal. It is possible that adolescents in this subtype may have less access to lethal means of suicide, or they may have a diminished desire to actually die relative to other suicidal adolescents whose functioning may be more impaired.

Like the high functioning subtype, the narcissistic group showed high adaptive functioning and school performance and low levels of SUD and CD, but this group is not characterized by mood or anxiety problems. This group is not well represented in the adolescent suicide literature, although there is evidence that cluster B personality disorders, in general, confer a significant risk (Brent et al., 1994). In addition, Ellis et al. (1996) found a similar histrionic-narcissistic cluster of adult attempters.

The last subtype, immature, displayed marked social isolation and anxiety, as well as a significant association with SPD. This group is similar to the group of socially isolated men exhibiting schizoid personality features at risk for suicide described by Peck (1981), and it also appears similar to a detached suicidal cluster found in an adult sample (Engström et al., 1996). Although Immature adolescents seem similar to socially phobic adolescents who are at an increased risk of suicide attempt (Nelson et al., 2000), they may represent adolescents at risk for the development of psychotic disorders if one considers the association of this subtype to SPD (Torgersen, 1985). In addition, SWAP-II-A items ranked as a 6 (rather than 7, which are the most

descriptive) for this group, suggesting overly concrete thinking and a constricted range of emotion, which are commonly observed in individuals with schizophrenia (Alpert et al., 1997). On the other hand, these items could reflect autism spectrum disorders (Rumsey et al., 1985), which we did not measure.

Clinical Implications

Adolescents who attempt suicide represent a heterogeneous group, and even adolescents who seem to be functioning well may be at risk. In general, adolescents who are similar to the high functioning, externalizing, and immature subtypes do not attempt suicide, but they constitute a large portion of attempters in this study. Practitioners should be vigilant in assessing for suicidal behavior, even when the adolescents in their care do not exhibit typical risks, and they should be particularly attentive when treating adolescents similar to our emotionally dysregulated subtype because of the higher likelihood of attempt. Overall, assessing adolescents' risk of suicide attempt should include not only a list of risk factors but also a deeper understanding and consideration of personality. After all, as described by Allport (1937), "Personality is the dynamic organization within the individual of those psychosocial systems that determine his [or her] unique adjustments to his [or her] environment" (p. 48). Clinicians should consider this dynamic organization, which includes important risk factors, to better predict whether adolescents' unique adjustments may include suicidal behavior.

Limitations and Future Directions

This study may have been limited by a few factors. First, this study includes only adolescents who attempted rather than completed suicide, potentially omitting meaningful subtypes, although there is increasing evidence that suicide attempt and completion constitute a single spectrum of risk (Brent and Mann, 2005).

Exclusion criteria for this study may also limit generalizability. Clinicians did not include (per instructions) patients with a history of chronic psychosis, and although suicide is the leading cause of death for people diagnosed with schizophrenia (Caldwell and Gottesman, 1990), our data do not allow for replication of those findings. The mean age of our sample, however, was 15.8 (1.5) years, which is somewhat lower than the average onset of psychotic symptoms (Loranger, 1984), suggesting that the exclusion of psychotic adolescents did not result in sweeping omissions. Furthermore, the immature subtype may capture adolescents at risk of developing psychosis.

In addition, only adolescents with personality problems were included in this sample. Because attempting suicide is an extreme response to stressors and the sample included patients ranging from those with mild to severe personality pathology, this exclusion is unlikely to have led to substantial bias, although it may not represent suicidal adolescents who have never been seen by a mental health professional, as in some clusters of adult completers (O'Connor et al., 1999). Furthermore, it may not represent groups of adolescents who experience substantial prejudice, such as gay, lesbian, bisexual, and transgendered adolescents who have a high rate of suicide attempt, especially before and during the coming out process (D'Augelli et al., 2001).

In addition, ethnic diversity in this sample of suicide attempters was limited, although it was not particularly limited in the broader sample from which this subsample was derived because the rate of suicide attempt is still lower for many ethnic groups, with the exception of Native American youths (Centers for Disease Control and Prevention, 2009). The subtypes should be validated using samples from diverse ethnic and socioeconomic populations.

With respect to construct validity analyses, the treating clinician provided both the personality data used for subtyping and the measures of criterion variables, so the issue of method variance remains;

however, because virtually no research exists on the subtypes of suicidal adolescents, systematic preconceptions likely cannot completely account for these findings, although it certainly should not be dismissed. DeFife et al. (2010) found that multiple informants (*i.e.*, self, clinician, and independent interviewer) provided convergent data using similar methodology in an adult patient sample. Future studies of suicide in adolescents should include multiple informants so that these subtypes may be verified without this limitation.

Future studies should also compare personality subtypes of not only suicide attempters but also those of nonattempters. Whether the Q-factor structure is similar may be important in evaluating the meaning of the results of this study. Do the subtypes found for nonattempters merely represent subtypes found in the general population of adolescents? Do the suicidal subtypes constitute unique groups or uniquely prominent groups?

Despite its limitations, this study shows that the path to suicide may be quite different depending on what type of person is making the decision. Understanding those differences is vital to the prediction and prevention of future suicide attempts.

DISCLOSURE

The primary instrument used in this study for personality assessment and diagnosis, the Shedler-Westen Assessment Procedure, is likely to have commercial applications, available at www.swapassessment.org, although no funding was provided by any commercial entity for this research.

This research was funded by a grant from the National Institute of Mental Health (MH62377).

REFERENCES

- Allan WD, Kashani JH, Dahlmeier JM, Beck N Jr, Reid JC (1998) 'Anxious suicidality': A new subtype of childhood ideation? *Suicide Life Threat Behav.* 28:251-260.
- Allison S, Roeger L, Martin G, Keeves J (2001) Gender differences in the relationship between depression and suicidal ideation in young adolescents. *Aust N Z J Psychiatry.* 35:498-503.
- Allport GW (1937) *Personality: A psychological interpretation*. Oxford, England: Henry Holt and Company, Inc., p. 48.
- Alpert M, Kotsaftis A, Pouget ER (1997) Speech fluency and schizophrenic negative signs. *Schizophr Bull.* 23:171-177.
- Anderson RN, Smith BL (2003) Deaths: Leading causes for 2001. *Natl Vital Stat Rep.* 52:1-86.
- Bernstein DP, Cohen P, Skodol A, Bezirgianian S, Brook JS (1996) Childhood antecedents of adolescent personality disorders. *Am J Psychiatry.* 153:907-913.
- Blagov PS, Westen D (2008) Questioning the coherence of histrionic personality disorder: Borderline and hysterical personality subtypes in adults and adolescents. *J Nerv Ment Dis.* 196:785-797.
- Block J (1978) *The Q-Sort method in personality assessment and psychiatric research*. Palo Alto, CA: Consulting Psychologists Press.
- Blum RW, Beuhring T, Shew ML, Bearinger LH, Sieving RE, Resnick MD (2000) The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *Am J Pub Health.* 90:1879-1884.
- Bolger N, Zuckerman A (1995) A framework for studying personality in the stress process. *J Pers Soc Psychol.* 69:890-902.
- Brent DA, Mann JJ (2005) Family genetic studies, suicide, and suicidal behavior. *Am J Med Genet C Semin Med Genet.* 133C:13-24.
- Brent DA, Johnson BA, Perper J, Connolly J, Bridge J, Bartle S, Rather C (1994) Personality disorder traits, impulsive violence, and completed suicide. *J Am Acad Child Adolesc Psychiatry.* 33:1080-1086.
- Brent DA, Johnson B, Bartle S, Bridge J, Rather C, Matta J, Connolly J, Constantine D (1993) Personality disorder, tendency to impulsive violence, and suicidal behavior in adolescents. *J Am Acad Child Adolesc Psychiatry.* 32:69-75.
- Caldwell CB, Gottesman II (1990) Schizophrenics kill themselves too: A review of risk factors for suicide. *Schizophr Bull.* 16:571-589.
- Centers for Disease Control and Prevention (2009). Suicide Prevention. National Center for Injury Prevention and Control, Division of Violence Prevention. Available at: http://www.cdc.gov/violenceprevention/pub/youth_suicide.html. Accessed September 7, 2011.

- Cheng AT, Mann AH, Chan KA (1997) Personality disorder and suicide: A case-control study. *Br J Psychiatry*. 170:441–446.
- D'Augelli AR, Hershberger SL, Pilkington NW (2001) Suicidality patterns and sexual orientation-related factors among lesbian, gay, and bisexual youths. *Suicide Life Threat Behav*. 31:250–264.
- DeFife JA, Drill R, Nakash O, Westen D (2010) Agreement between clinician and patient ratings of adaptive functioning and developmental history. *Am J Psychiatry*. 167:1472–1478.
- DiLallo JJ, Jones M, Westen D (2009) Personality subtypes in disruptive adolescent males. *J Nerv Ment Dis*. 197:15–23.
- Ellis TE, Rudd MD, Hasan Rajab M, Wehrly TE (1996) Cluster analysis of MCMI scores of suicidal psychiatric patients: Four personality profiles. *J Clin Psychol*. 52:411–422.
- Engström G, Alsen M, Gustavsson P, Schalling D, Träskman-Bendz L (1996) Classification of suicide attempters by cluster analysis: A study of the temperamental heterogeneity in suicidal patients. *Pers Individ Differ*. 21:687–695.
- Grossi V, Violato C (1992) Attempted suicide among adolescents: A stepwise discriminant analysis. *Can J Behav Sci*. 24:185–187.
- Hull-Banks EE, Kerr BA, Robinson Kurpius SE (2004) Risk factors of suicidal ideations and attempts in talented, at-risk girls. *Suicide Life Threat Behav*. 34:267–276.
- Johnson JG, Cohen P, Skodol AE, Oldham JM, Kasen S, Brook JS (1999) Personality disorders in adolescence and risk of major mental disorders and suicidality during adulthood. *Arch Gen Psychiatry*. 56:801–811.
- Jones M, Westen D (2010) Diagnosis and subtypes of adolescent antisocial personality disorder. *J Pers Disord*. 24:217–243.
- Lehnert KL, Overholser JC, Spirito A (1994) Internalized and externalized anger in adolescent suicide attempters. *J Adolesc Res*. 9:105–119.
- Loranger AW (1984) Sex difference in age at onset of schizophrenia. *Arch Gen Psychiatry*. 41:157–161.
- Martunnen M, Pelkonen M (2000) Psychiatric risk factors for adolescent suicide: A review. *Psychiatr Fenn*. 31:110–125.
- Martunnen MJ, Aro HM, Henriksson MM, Lonquist JK (1991) Mental disorders in adolescent suicide: DSM-III-R Axes I and II diagnoses in suicides among 13 to 19-year-olds in Finland. *Arch Gen Psychol*. 48:834–839.
- Mattison RE (1988) Suicide and other consequences of childhood and adolescent anxiety disorders. *J Clin Psychol*. 49:9–11.
- McManus M, Lerner H, Robbins D, Barbour C (1984) Assessment of borderline symptomatology in hospitalized adolescents. *J Am Acad Child Psychiatry*. 23:685–694.
- Nelson EC, Grant JD, Bucholz KK, Glowinski A, Madden PAF, Reich W, Heath AC, et al (2000) Social phobia in a population-based female adolescent twin sample: Co-morbidity and associated suicide-related symptoms. *Psychol Med*. 30:797–804.
- O'Connor RC, Sheehy NP, O'Connor DB (1999) The classification of completed suicide into subtypes. *J Ment Health*. 8:629–637.
- Ortigo KM, Westen D, Bradley R (2009) Personality subtypes of suicidal adults. *J Nerv Ment Dis*. 197:687–694.
- Peck ML (1981) The loner: An exploration of a suicidal subtype in adolescence. *Adolesc Psychiatry*. 9:461–466.
- Pelkonen M, Martunnen M (2003) Child and adolescent suicide: Epidemiology, risk factors, and approaches to prevention. *Pediatr Drugs*. 5:243–265.
- Portzky G, Avdenaert K, van Heeringen K (2005) Suicide among adolescents: A psychological autopsy study of psychiatric, psychosocial, and personality-related risk factors. *Soc Psychiatry Psychiatr Epidemiol*. 40:922–930.
- Powers A, Westen D (2009) Personality subtypes in patients with panic disorder. *Compr Psychiatry*. 50:164–172.
- Reinhertz HZ, Giaconia RM, Silverman AB (1995) Early psychosocial risks for adolescent suicidal ideation and attempts. *J Am Acad Child Adolesc Psychiatry*. 34:599–611.
- Rumsey JM, Rapoport JL, Sceery WR (1985) Autistic children as adults: Psychiatric, social, and behavioral outcomes. *J Am Acad Child Psychiatry*. 24:465–473.
- Shaffer D, Fisher P (1981) The epidemiology of suicide in children and adolescents. *J Am Acad Child Adolesc Psychiatry*. 20:545–565.
- Shaffer D, Garland A, Vieland V, Underwood MM, Busner C (1991) The impact of curriculum-based suicide prevention program for teenagers. *J Am Acad Child Adolesc Psychiatry*. 30:588–596.
- Shaffer D, Gould MS, Fisher P, Trautman P, Moreau D, Kleinman M, Flory M (1996) Psychiatric diagnosis in child and adolescent suicide. *Archives of General Psychiatry*. 53:339–348.
- Shedler J, Westen D (1998) Refining the measurement of Axis II: A Q-sort procedure for assessing personality pathology. *Assessment*. 5:333–353.
- Thompson-Brenner H, Eddy KT, Satir DA, Boisseau CL, Westen D (2008) Personality subtypes in adolescents with eating disorders: Validation of a classification approach. *J Child Psychol Psychiatry*. 49:170–180.
- Torgersen S (1985) Relationship of schizotypal personality disorder to schizophrenia. *Schizophr Bull*. 11:554–563.
- Violato C, Arato J (2004) Childhood attachment and adolescent suicide: A stepwise discriminant analysis in a case-comparison study. *Individ Differ Res*. 2:162–168.
- Westen D, Shedler J, Durrett C, Glass S, Martens A (2003) Personality diagnosis in adolescence: DSM-IV Axis II diagnoses and an empirically derived alternative. *Am J Psychiatry*. 160:952–966.