Prevalence of and Risk Factors for Suicide Attempts Versus Suicide Gestures: Analysis of the National Comorbidity Survey

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Definitions and classification schemes for suicide attempts vary widely among studies, introducing conceptual, methodological, and clinical problems. We tested the importance of the intent to die criterion by comparing self-injurers with intent to die, *suicide attempters,* and those who self-injured not to die but to communicate with others, *suicide gesturers,* using data from the National Comorbidity Survey (*n* = 5,877). Suicide attempters (prevalence = 2.7%) differed from suicide gesturers (prevalence = 1.9%) and were characterized by male gender, fewer years of education, residence in the southern and western United States; psychiatric diagnoses including depressive, impulsive, and aggressive symptoms; comorbidity; and history of multiple physical and sexual assaults. It is possible and useful to distinguish between self-injurers on the basis of intent to die.

Keywords: suicide attempt, suicide gesture, intent to die, self-harm, self-injury

Suicide is among the leading causes of death around the world (DeLeo, Bertolote, & Lester, 2002). It has been estimated that approximately 4.6% of individuals in the United States have made at least one suicide attempt in their lifetime (Kessler, Borges, & Walters, 1999), and a prior suicide attempt is among the best predictors of eventual death by suicide (Blumenthal, Bell, Neumann, Schuttler, & Vogel, 1989; Goldstein, Black, Nasrallah, & Winokur, 1991). Nevertheless, progress in the study of suicide has been hindered by several key methodological problems. Perhaps most important, there has been a lack of clarity and consistency in the terms used to define *suicide attempts.* The different approaches used for defining and classifying suicide attempts can be separated into three different perspectives, differing on the treatment of the presence of intent to die in the self-injurer. Many researchers and clinicians use liberal criteria for defining *suicide attempts,* including all self-injurious behavior, ignoring the issue of whether or not there is intent to die (e.g., Lewinsohn, Rohde, & Seeley, 1996; Seidlitz, Conwell, Duberstein, Cox, & Denning, 2001). Others make a firm distinction between those with and without intent to die and contend that the presence of lethal intent conveys significantly increased risk of death and should be explicitly assessed and used in the classification of cases. Yet a third perspective is that it is not useful or even possible to distinguish between self-injurers with and without intent to die. From this perspective, general terms such as *parasuicide* (Kreitman, 1977; Linehan, 1993; Platt et al., 1992) or *deliberate self-harm* (Hawton, Fagg, Simkin, Bale, & Bond, 1997, 2000) are used to refer to all nonfatal self-injury.

Emerging evidence suggests that it is indeed useful to distinguish between those with intent to die and those without such intent. For instance, those with intent to die have been shown to engage in more lethal self-injury (Beck, Beck, & Kovacs, 1975; Brown, Henriques, Sosdjan, & Beck, 2004) and are more likely to subsequently die by suicide (Harriss, Hawton, & Zahl, 2005; Hjelmeland, 1996; Lonnqvist & Ostamo, 1991; Ostamo, Lonnqvist, Heinonen, Leppavuori et al., 1991). Consistent with this perspective, an expert panel recently defined *suicide attempts* as "potentially self-injurious behavior with a nonfatal outcome, for which there is evidence (either implicit or explicit) that the person intended at some (nonzero) level to kill himself/herself" (O'Carroll, Berman, Maris, & Moscicki, 1996, p. 247). In contrast, self-injury in which there is no intent to die, but instead an intent to give the appearance of a suicide attempt in order to communicate with others is commonly referred to as a *suicide gesture.*[1] Despite these recommendations and supportive data, there continues to be definitional confusion and debate about the role of intent in the definition of suicide attempts, and intent to die is rarely explicitly assessed in studies of suicide attempts. This issue requires resolution, as ignoring the intent of self-injury can lead to an overestimation of the prevalence of suicide attempts and can hinder the identification of risk factors specific to suicide attempts.

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[1] O'Carroll et al. (1996) suggested the term *instrumental suicide-related behaviors* for all self-injury in which there is no intent to die; however, we use the term *suicide gesture* here given its greater specificity and more common use in scientific and clinical communications.

The current study was designed to extend previous work in this area in several ways and to overcome some of the methodological limitations of prior research. The first goal of this study was to generate an estimate of the prevalence of lifetime suicide attempts that explicitly considers intent to die, as well as an estimate of the prevalence of suicide gestures, which has not been previously reported in the literature. In addition, whereas most studies of suicide attempts have used relatively small, selective samples, limiting the generality of the findings of these studies, the current study used data from the National Comorbidity Survey (NCS), a nationally representative sample of individuals, which allows for greater generality of the results than most previous studies of suicide attempts. We expected the lifetime prevalence of suicide attempts in this study to be substantially lower than the 4.6% figure generated previously using a more liberal definition of *suicide attempt* that did not explicitly require intent to die (Kessler et al., 1999).

The second goal of the current study was to examine whether those who report engaging in suicide attempt(s) with intent to die (subsequently referred to as *suicide attempts*) differ significantly from those without such intent, but with the intent of communicating with others (subsequently referred to as *suicide gestures*). Demonstrating differences between these two groups would serve two important purposes. First, it would add to previous research suggesting that self-injurers with intent to die differ from those without such intent. Second, and perhaps more important, it would result in the identification of risk factors specific to suicide attempts (i.e., vs. suicide gestures). Virtually all studies examining risk factors for suicide attempts have compared suicide attempters to individuals with *no* history of self-injury. Therefore, it is unclear if the risk factors identified in previous studies are associated with self-injury in general or with suicide attempts in particular. Identifying risk factors specific to suicide attempts is an especially important goal given the higher medical lethality and probability of death associated with suicide attempts compared with suicide gestures, as mentioned above.

Building on previous work in this area, we expected suicide attempters to differ from those engaging in suicide gestures on multiple domains, with the former group more closely resembling those who die by suicide according to previous research in this area. More specifically, we expected risk factors for suicide attempts to be male gender, White race/ethnicity, fewer years of education, and residence in the southern and western regions of the United States, as each of these factors is associated with an elevated rate of death by suicide (American Psychiatric Association [APA], 2003; Centers for Disease Control [CDC], 2004; DeLeo et al., 2002; Moscicki, 1999). In addition, we expected suicide attempts to be uniquely predicted by the presence of diagnoses most closely related to suicide death, such as affective disorders, substance use disorders, conduct disorder, Cluster B personality disorder, and psychiatric comorbidity (Brent et al., 1988, 1993; Cavanagh, Carson, Sharpe, & Lawrie, 2003; Cheng, Chen, Chen, & Jenkins, 2000; Shaffer et al., 1996). Finally, we expected suicide attempts to be significantly and uniquely predicted by a history of physical and sexual abuse, factors that also have been associated with elevated risk of suicide death in some previous studies (Brent, Baugher, Bridge, Chen, & Chiappetta, 1999; Brent, Perper et al., 1994), but have not received as much empirical consideration as demographic and diagnostic risk factors.

Method

Participants

The NCS was conducted among a nationally representative sample of 8,098 respondents aged 15 to 54 years interviewed between 1990 and 1992 (82.4% response rate). Informed consent was obtained from all respondents and from the parents of all minors. Data were collected using a two-part face-to-face structured interview completed in the home of each respondent. Part 1 included the assessment of *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed. rev.; *DSM–III–R*; APA, 1987) disorders and was administered to all respondents. Part 2 assessed risk factors and consequences of the disorders evaluated in Part I, including all questions about suicide attempts/gestures, and was administered to all respondents who screened positive for any lifetime disorder in Part I as well as to a probability subsample of other respondents. The current study includes the 5,877 respondents who participated in Part II. Data for these respondents were weighted to correct for differential probabilities of selection into Part II as well as for differential probabilities of within-household selection and nonresponse. Comparisons of the demographic distribution of these 5,877 respondents with census data demonstrate that the sample is representative of the U.S. population on a wide range of sociodemographic variables (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Further details about the design and methods used in the NCS are reported elsewhere (Kessler, Little, & Groves, 1995; Kessler et al., 1994).

Measures

Assessment of suicide attempts/gestures. All Part II respondents were asked questions about lifetime history of suicide attempts ("Have you ever attempted suicide?"). Positive responses were followed with probes regarding age of first attempt and the specific intent of the behavior. In cases in which there was more than one such episode, the intent of the first and most recent episodes was examined. Intent was assessed by asking respondents which of the following three statements most accurately described their attempt: (a) "I made a serious attempt to kill myself and it was only luck that I did not succeed," (b) "I tried to kill myself, but I knew the method was not fool-proof," and (c) "My attempt was a cry for help, I did not want to die." For the purposes of this report, we defined suicide attempters as those with a lifetime history of ever endorsing Response a or b ($n = 156$), consistent with the definition described above requiring some (nonzero) intent to die. Those who endorsed c ($n = 112$), but never endorsed a or b, were classified as having engaged in a suicide gesture.

Assessment of sociodemographic variables. The sociodemographic variables included in the analyses are sex, race/ethnicity, age, years of education, religious affiliation, and current region of residence in the United States. All sociodemographic characteristics of the NCS sample closely match that of the U.S. population and are reported in full detail elsewhere (Kessler, Sonnega et al., 1995).

Assessment of psychiatric diagnosis. Psychiatric diagnoses were obtained using a modified version of the Composite International Diagnostic Interview (CIDI; Robins et al., 1988; World Health Organization [WHO], 1990b), a structured interview that generates diagnoses according to the definitions and criteria of both the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; APA, 1994) and the ICD-10 (WHO, 1990a). Field trials have supported the reliability and validity of all diagnoses assessed by the CIDI (Kessler et al., 1998; Wittchen, 1994), with the exception of mania and nonaffective psychosis (NAP) (Kendler, Gallagher, Abelson, & Kessler, 1996; Kessler, Rubinow, Holmes, Abelson, & Zhao, 1997). Only the euphoric-grandiose subtype of mania, which is validly assessed with the CIDI (Kessler, Davis, & Kendler, 1997), was included to

define mania in these analyses. Given that the CIDI overdiagnoses NAP (Kessler et al., 1998), the CIDI was used as a first-stage screen for psychosis and all respondents screening positive were reinterviewed in order to confirm a full diagnosis of NAP (Kendler et al., 1996). The presence and age of onset of each psychiatric diagnosis were used in the study analyses.

Assessment of history of physical and sexual abuse. Several abuse history variables known to be associated with suicide were evaluated in Part II of the NCS interview and were used in the current study. Respondents were provided with a list of various traumatic events and asked to indicate which events they had experienced, and at what age. Given past research on risk factors for suicide, questions relevant for the current study inquired about sexual assault ("You were raped [someone had sexual intercourse with you when you did not want to by threatening you or using some degree of force]"), ("You were sexually molested [someone touched or felt your genitals when you did not want them to]"), physical assault ("You were physically attacked or assaulted"), and childhood history of physical abuse ("You were physically abused as a child") and neglect ("You were seriously neglected as a child").

Analytic Procedures

Each respondent was classified into one of three categories: no lifetime history of self-injury, lifetime history of suicide gesture, or lifetime history of suicide attempt. First, we calculated the prevalence of engaging in at least one lifetime suicide attempt. Second, we calculated the prevalence of each of the sociodemographic, diagnostic, and abuse history variables and compared them across the suicide gesture and suicide attempt groups. We do not provide an overall comparison of non-self-injurious with self-injurious individuals in this study, as these data from the NCS have been presented previously (Kessler et al., 1999). Group differences in the prevalence of potential risk factors were evaluated using simple cross tabulations. We evaluated the effect of each of these variables in distinguishing suicide attempters from suicide gesturers. These analyses were conducted using logistic regression models. Results are reported in odds ratios (and 95% confidence intervals) obtained by exponentiating the regression coefficients from the logistic models. Because we were interested in identifying risk factors for suicide attempts, we included in our analyses only those demographic, diagnostic, and abuse events that occurred prior to the self-injury in question. That is, for each respondent only those diagnoses and events that occurred prior to that individual's earliest identified self-injury were included. This provided a more conservative test of the study hypotheses and ensures the temporal precedence of all risk factors examined. As mentioned, data were weighted to correct for selection and nonresponse. In evaluating the results of our analyses we used conventional statistical significance testing, rather than design-based adjustments, given that our goal was to evaluate specific hypotheses rather than to make population projections.

Results

Prevalence of Suicide Attempts and Suicide Gestures

A total of 268 respondents (4.6% of the sample) reported a lifetime history of "suicide attempt." However, requiring intent to die in the definition of suicide attempt reduced that number to 156 (2.7% of the sample). Subsequent analyses are based on comparisons between those with a lifetime history of a true suicide attempt versus the 112 (1.9% of the sample) respondents with a history of suicide gesture.

The majority of respondents who endorsed making either a suicide attempt or suicide gesture reported only one such act in their lifetime (69.8%), and the rate of repeated self-injury did not differ significantly among suicide attempters (34.6%) and suicide

gesturers (24.1%).[2] In cases of repeated self-injury, the NCS examined respondents' intent during only the first and most recent self-injurious act, precluding a fine-grained analysis of each episode. Nevertheless, there was consistency in the reported intent, with 70.8% of repeated self-injurers reporting the same intent for both episodes and only 29.2% reporting a change in intent.

Sociodemographic Risk Factors for Suicide Attempt

Sociodemographic risk factors for intent to die are presented in Table 1. Among all self-injurers, specific risk factors for the presence of suicide attempt were male gender, fewer years of education, and residence in the southern and western United States. Individuals without a specific religious affiliation were twice as likely to engage in a suicide attempt, $\chi_1^2 = 4.21$, $p = .040$; however, this risk was not statistically significant in the logistic regression equation ($p = .060$). All statistically significant sociodemographic risk factors were statistically controlled in all subsequent analyses.

Prior Psychiatric Disorders as Risk Factors for Suicide Attempt

The prevalence of each psychiatric diagnosis assessed is reported for suicide gesturers and suicide attempters in Table 2. Specific risk factors for suicide attempt included the prior presence of psychiatric diagnoses associated with affective, impulsive, and aggressive symptoms. More specifically, the presence of a major depressive episode, drug dependence or abuse, conduct disorder, and antisocial personality disorder, as well as the presence of psychiatric comorbidity (≥ 3 disorders), all significantly increased the risk of suicide attempt. The presence of mania increased the likelihood of suicide attempt ninefold (i.e., eight of the nine self-injurers who met diagnostic criteria for mania reported a suicide attempt); however, given the low prevalence of mania this relation was not statistically significant, $\chi_1^2 = 3.64$, $p = .057$. Simple phobia also emerged as a risk factor for suicide attempt. Overall, several specific diagnoses and a greater accumulation of diagnoses (i.e., psychiatric comorbidity) distinguished suicide attempters from suicide gesturers.

Physical and Sexual Assault as Risk Factors for Suicide Attempt

The prevalence of physical and sexual abuse between the two groups is presented in Table 3. Although the presence of rape or sexual molestation did not differ between suicide gesturers and attempters, the risk of suicide attempt was significantly increased in the presence of *multiple* rapes and *multiple* sexual molestations as well as with higher rates of physical assault. Physical abuse and

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[2] The NCS also examined the total number of lifetime "suicide attempts" reported regardless of intent to die. The results of each of the subsequent regression analyses were virtually unchanged when this variable was entered in the first step of each regression equation demonstrating the results are not accounted for by the total number of such acts. Given this, as well as the questionable validity and reliability of this variable due to uncertainty about the intent to die in each episode, the results are reported without this variable in the equations.

Table 1
Demographic Characteristics by Presence of Intent to Die

	Suicide gesturers %	Suicide attempters %	OR (95% CI)	χ^2
Sex				
Female	76.8	63.9	1.0	
Male	23.2	36.1	1.9 (1.1–3.3)*	5.10*
Ethnicity				
Non-Hispanic White	73.2	77.4	1.0	
Non-Hispanic Black	8.9	7.7	0.8 (0.3–1.9)	
Hispanic	15.2	11.0	0.7 (0.3–1.4)	
Other	2.7	3.9	1.4 (0.3–6.0)	1.44
Cohort, age				
15–24	33.9	31.2	1.0	
25–34	26.8	28.7	1.2 (0.6–2.2)	
35–44	26.8	24.2	1.0 (0.5–1.9)	
45–54	12.5	15.9	1.4 (0.6–3.1)	0.93
Education				
Less than high school	25.9	41.0	1.0	
High school graduate	37.5	38.5	0.6 (0.4–1.2)	
Some post-HS (13–15 yrs)	30.4	14.7	0.3 (0.2–0.6)*	
College graduate (16 yrs)	5.4	5.8	0.07 (0.2–2.0)	11.82**
Religious affiliation				
Protestant	57.7	52.6	1.0	
Catholic	26.8	23.1	0.9 (0.5–1.7)	
Other	8.0	9.0	1.2 (0.5–2.8)	
None	7.1	15.4	2.3 (1.0–5.4)	4.39
Region of U.S.A.				
Northeast	25.0	18.5	1.0	
Midwest	32.1	16.6	0.07 (0.3–1.5)	
South	24.1	38.9	2.2 (1.1–4.5)*	
West	18.8	26.1	1.9 (0.9–3.8)	14.09**

Note. Odds ratios (OR) and confidence intervals (CI) were obtained from logistic regression equations (one per variable) with suicide attempt status as the dependent variable. HS = high school.
* $p < .05$.   ** $p < .01$.

neglect during childhood were not associated with increased risk of suicide attempt.

Discussion

Individuals who engage in self-injury with intent to die differ significantly from those without such intent. Risk factors for membership in the former group closely resemble those for suicide death. These results add to previous findings demonstrating that those with intent to die from self-injury are more likely to sustain more medically lethal injuries and are more likely to ultimately die by suicide (Brown et al., 2004; Harriss et al., 2005). Taken together, these findings highlight the importance of distinguishing between self-injurers with and without intent to die. As such, it is recommended that researchers and clinicians avoid using terms and classification schemes that ignore or obscure these differences, such as *parasuicide* and *deliberate self-harm,* and instead classify self-injury according to the intent of such behavior.

Previous epidemiologic studies have reported lifetime prevalence of suicide attempts as 1.1% to 4.6% (Kessler et al., 1999; Moscicki et al., 1988; Paykel, Myers, Lindenthal, & Tanner, 1974). These varying rates may be the result of different wording or interpretation of assessment items. An advantage of the NCS and a strength of the current study is the inclusion of follow-up items regarding the specific intent of individuals' self-injury. The current study revealed that although 4.6% of respondents indicated they made a "suicide attempt," only 2.7% reported doing so with intent to die, whereas 1.9% denied any such intent and reported doing so to communicate with others. Given that almost half (42%) of those who reported making a "suicide attempt" indicated they had no intent to die, we strongly recommend that future studies explicitly assess and require intent to die as a criterion for defining suicide attempts. We used a general classification scheme for intent to die based on presence or absence of this construct. Future studies may benefit from the use of more fine-grained analyses of intent to die, such as the examination of intent to die as a continuous measure (e.g., Beck et al., 1975). Explicitly evaluating the intent of self-injury will advance research in several ways. Assessing intent facilitates understanding of the factors maintaining self-injurious behavior (e.g., Nock & Prinstein, 2004, 2005). In addition, carefully defining key constructs, such as suicide attempts, for participants and patients will reduce variation in responding and will enhance interpretation of study results (see Linehan, 1997; Meehan, Lamb, Saltzman, & O'Carroll, 1992).

Emerging evidence demonstrates that certain risk factors are useful for predicting the presence of self-injurious thoughts and behaviors in general, whereas other risk factors are useful in distinguishing among specific types of self-injurious thoughts and behaviors. For instance, in one recent study, individuals' level of

Table 2
Lifetime Prevalence of DSM Diagnoses and Presence of Intent to Die

DSM diagnosis	Suicide gesturers %	Suicide attempters %	OR (95% CI)
Major depressive episode	42.0	53.8	1.7 (1.0–2.9)*
Mania	0.9	5.2	9.2 (0.7–118.8)
Dysthymia	15.2	22.6	1.6 (0.8–3.2)
Drug abuse	17.0	32.9	2.2 (1.2–4.1)*
Drug dependence	11.6	23.1	2.2 (1.1–4.5)*
Alcohol abuse	28.8	43.2	1.6 (0.9–2.9)
Alcohol dependence	21.4	35.9	1.7 (0.9–3.1)
Conduct disorder	20.5	42.6	2.3 (1.2–4.2)**
Antisocial personality disorder	7.2	20.6	2.5 (1.1–5.6)*
Non-affective psychosis	1.8	5.8	3.2 (0.6–15.9)
Posttraumatic stress disorder	27.7	27.1	1.0 (0.6–1.8)
Generalized anxiety disorder	8.0	14.7	2.2 (0.9–5.2)
Panic disorder	6.3	11.5	1.9 (0.8–4.9)
Agoraphobia	12.6	13.5	0.9 (0.5–2.1)
Social phobia	18.0	28.8	1.7 (0.9–3.2)
Simple phobia	17.9	30.8	2.0 (1.1–3.7)*
Any 1 disorder	20.5	12.9	0.6 (0.3–1.1)
Any 2 disorders	14.3	12.2	0.9 (0.4–1.9)
≥3 disorders	37.5	60.6	2.4 (1.4–4.1)**

Note. Odds ratios (OR) and confidence intervals (CI) were obtained from logistic regression equations (one per row) with suicide attempt status as the dependent variable, controlling for significant demographic variables from Table 1. *DSM = Diagnostic and Statistical Manual of Mental Disorders.*
* $p < .05$, by two-sided test.   ** $p < .01$.

depressed mood distinguished currently suicidal (ideation or attempts) from nonsuicidal individuals, but only the presence of past suicide attempts and anhedonia distinguished between current suicidal ideators and suicide attempters (Nock & Kazdin, 2002). Identifying specific risk factors for different types of suicide-related outcomes is necessary to improve the accuracy of the prediction of such outcomes. Toward this end, the current findings demonstrate that multiple factors distinguish between suicide gesturers and suicide attempters, including demographic, diagnostic, and abuse history variables.

Consistent with previous reports, more women than men in this study engaged in self-injury in general. However, men who engaged in self-injury were more likely to make suicide attempts than suicide gestures, whereas women were more likely to make suicide gestures than suicide attempts. In other words, men were more likely to report intent to die from their self-injury, whereas women were more likely to report doing so as a means of communicating with others. This finding is in line with earlier suggestions that men are more likely than women to die by suicide because of a higher likelihood of lethal intent (Denning, Conwell, King, & Cox, 2000), and with findings that the rate of suicide attempts for men and women becomes approximately equal if one considers only medically serious suicide attempts (Beautrais, 2001). Two important caveats deserve serious consideration. First, it is possible that these results reflect a reporting bias and there was no actual difference in true intent at the time of self-injury. However, the fact that men are more likely than women to use lethal methods (e.g., firearms) during suicide attempts (CDC, 2004) suggests this finding may reflect a true gender difference.

Second, even though intent to die is associated with medical lethality and subsequent death by suicide (e.g., Harriss et al., 2005), self-injury in the absence of intent to die is a very dangerous behavior requiring serious research and clinical attention. The absence of intent to die does not in itself protect against death from such behavior.

We also found that psychiatric diagnoses associated with depressive (Major Depressive Episode and Mania), impulsive (Drug Abuse and Dependence), and aggressive (Conduct Disorder and Antisocial Personality Disorder) behaviors increased the risk of suicide attempt. These diagnoses, along with psychiatric comorbidity, are among the most consistently supported risk factors for suicide death (Brent, Johnson et al., 1994; Brent et al., 1993; Cavanagh et al., 2003; Cheng et al., 2000; DeLeo et al., 2002; Foster, Gillespie, McClelland, & Patterson, 1999; Henriksson et al., 1993; Isometsa et al., 1996; Shaffer et al., 1996; Shafii, Steltz-Lenarsky, Derrick, Beckner, & Whittinghill, 1988). Thus, although the presence of any psychiatric disorder increases the risk of self-injurious thoughts and behaviors generally (Kessler et al., 1999), researchers and clinicians should be especially careful to monitor the likelihood of suicide attempts in the presence of these specific diagnoses. Simple phobia was also a risk factor for suicide attempt in the current study. Prior studies have reported a relation between acute anxiety/agitation and suicide attempts (e.g., Fawcett, 2001). However, previous support for the relation between simple phobia and suicide attempts is lacking and the current finding may be a function of the relation between simple phobia and comorbid disorders that are themselves independently associated with suicide attempts (e.g., Vickers & McNally, 2004).

Psychiatric diagnoses may be best conceptualized as proximal risk factors for suicide attempts. A growing body of literature highlights the relation between more distal risk factors, such as physical and sexual abuse, and the occurrence of self-mutilation (Gratz, 2003; van der Kolk, Perry, & Herman, 1991), suicide attempts (Brodsky, Malone, Ellis, Dulit, & Mann, 1997; Brodsky et al., 2001; Dube et al., 2001), and suicide death (Brent et al., 1999). What has been less clear is whether and how a history of traumatic events is differentially related to these different forms of

Table 3
Lifetime Prevalence of Physical and Sexual Abuse and Intent to Die

	Suicide gesturers %	Suicide attempters %	OR (95% CI)
History of "rape"	19.6	21.9	1.5 (0.8–2.8)
Single incident	85.7	57.1	1.0
Multiple incidents	14.3	42.9	2.9 (0.7–12.4)
History of "sexual molestation"	25.0	21.8	0.8 (0.4–1.5)
Single incident	53.6	26.5	1.0
Multiple incidents	46.4	73.5	3.2 (1.1–9.9)*
History of physical assault	11.6	23.1	2.1 (1.0–4.4)*
Physical abuse as child	19.8	23.9	1.3 (0.7–2.5)
Neglect as child	11.7	17.4	1.4 (0.7–2.9)

Note. Odds ratios (OR) and confidence intervals (CI) were obtained from logistic regression equations (one per row) with suicide attempt status as the dependent variable, controlling for demographic variables from Table 1.
* $p < .05$, by two-sided test.

self-injury. Our findings again add specificity to previous reports. It is interesting that an overall history of rape, sexual molestation, and child abuse or neglect was unrelated to the presence of intent to die; however, intent to die was uniquely associated with *multiple* incidents of rape and sexual molestation, as well as with a history of physical assault. These data suggest a dose–response relation between sexual trauma and subsequent self-injury, with more frequent trauma leading to suicide attempt. However, respondents were not asked the specific number of traumatic incidents that occurred, so it is unclear whether there is a linear dose–response relation or if two sexually traumatic incidents are sufficient to convey an increased risk of suicide attempt. Nevertheless, the results indicate that repeated traumatic events carry an increased risk of suicide attempt. The specificity of our results for sexual and physical abuse, but not neglect, is consistent with previous findings in this area (e.g., Green, 1978).

These findings should be viewed in the context of the limitations of this study. First, the NCS is a cross-sectional survey relying on retrospective self-report; therefore, the responses may have been affected by individual biases and inaccuracies. For instance, respondents may have forgotten events, made misattributions about the reasons for their behaviors, or may have erred regarding the timing of the events assessed. It is also possible that current or more recent events or mood states may have biased individuals' recollection of past events (see Schacter, 1999, for a review). Such biases are unlikely to have affected the sociodemographic factors, but may have influenced recall of the diagnostic and abuse history variables. However, if such biases were present, they were limited in scope, as we found specific effects for hypothesized diagnostic and abuse variables. Second, many of the constructs were assessed using a single-item rather than multiple-item scales, which may limit the reliability of responses. In addition, although the abuse history items provided specific definitions of each construct assessed (e.g., "rape," "molestation") it is possible that individual or idiosyncratic interpretations of these items introduced bias or error into responses. Problems associated with recall and single-item measurement are also likely to have influenced our assessment of suicide attempts and gestures. It is interesting that suicide attempts were more prevalent than suicide gestures, and this finding highlights the scope and the seriousness of the problem under investigation. However, these estimates may have been affected by the inclusion of only individuals who responded affirmatively to the first item about making a "suicide attempt." Not captured by these assessment methods are individuals who would not label their self-injurious behavior a "suicide attempt," but may instead consider it a suicide gesture or other form of nonsuicidal self-injury (e.g., self-mutilation). Inclusion of such cases would have increased the estimated prevalence of suicide gestures generated in this study. As such, we recommend that future studies include assessment of self-injury with and without intent to die among all respondents.

A third limitation of this study is the presence of measurement error associated with current methods for assessing intent to die. There is a growing literature demonstrating limitations in individuals' ability to accurately report their intentions for engaging in different behaviors (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trotschel, 2001; Wegner, 2004), and such limitations undoubtedly apply to the assessment of intent to die. Although previous studies and the current report demonstrate the usefulness of self-report of

intent to die, the development of more objective and hopefully more accurate methods for evaluating this construct represent an important goal for future work in this area.

Finally, the NCS did not collect data on individuals who died by suicide; therefore, we were unable to directly compare the characteristics and risk factors for suicide attempts with those of suicide (see Beautrais, 2001), and instead relied on findings of those who died by suicide reported in other studies. Nevertheless, the current study provides an advance over previous studies by delineating differences between suicide gesturers and attempters and highlighting risk factors specific to suicide attempts.

In conclusion, we demonstrated that those who report engaging in self-injury with intent to die differ in significant ways from self-injurers without such intent. These results underline the importance of using intent to die to define and classify self-injurers and provide key information about the risk factors for engaging in such behavior. Researchers and clinicians are encouraged to attend to the importance of intent in making methodological and clinical decisions surrounding self-injury, and to use clear and consistent definitions for constructs related to self-injury. Although perceived intent of one's behavior is a complex and dynamic construct, assessments of intent have proven useful in predicting severity of self-injury and death in previous studies, and in revealing hypothesized differences in risk factors in the current study. These findings suggest that classifying individuals on the basis of the intent of their self-injury is a useful scientific and clinical endeavor. Several lines of future work follow directly from our findings, including the use of longitudinal data to clarify temporal relations between predictors and outcomes, the evaluation of more specific risk factors for the various types of self-injury, and the evaluation of models for the development and maintenance of self-injury that provide a more thorough integration of the various risk factors identified in this and previous studies.

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