

Introduction to the Special Section on Suicide and Nonsuicidal Self-Injury: A Review of Unique Challenges and Important Directions for Self-Injury Science

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Self-injurious behaviors, including nonsuicidal self-injury (NSSI) and suicidal behaviors, are remarkably prevalent and woefully understudied. This area of research involves numerous methodological, ethical, and practical challenges that have limited progress in understanding some of the most basic characteristics and correlates of self-injurious behavior. To date, relatively little data are available to develop empirically based preventions or interventions, and no empirically supported treatments currently are available to reduce NSSI or suicidality in most populations. The articles in this special section offer examples of methodologically innovative, theoretically based work that address these research needs. Articles in this special section include studies of functional models of NSSI, studies that examine more distal risk factors for NSSI, and studies of suicidality. A brief review of current research in these areas is offered.

Keywords: nonsuicidal self-injury, suicide

Self-injurious behaviors are dangerous and perplexing psychological phenomena. Numerous forms of self-injury have been identified, each with distinct correlates and possibly serving different psychological functions. For instance, individuals may engage in several types of behaviors that reflect an intent to die (e.g., suicide ideation, threats, gestures, attempts; referred to herein as *suicidal behavior* or *suicidality*; for taxonomies, see O'Carroll et al., 1996; Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007a, 2007b). Other self-injurious behaviors reflect deliberate destruction of one's body tissue but without reported suicidal intent (i.e., nonsuicidal self-injury [NSSI]).

Both types of self-injury are remarkably prevalent, particularly within certain age periods and ethnic groups. Across all ages, suicide is the 11th leading cause of death; approximately one person dies of suicide in the United States every 16 min (Centers for Disease Control and Prevention [CDC], 2005). Among adolescents (ages 15–24 years) and young adults (ages 25–34 years), suicide is the third and second leading cause of death, respectively. Rates of suicide are significantly greater among Native Americans than other racial/ethnic groups and significantly lower among African Americans, particularly female African Americans (CDC, 2005). Nonfatal suicide attempts also occur at a remarkable frequency (estimated at a rate of approximately 25 for every one

completed suicide). Approximately 8.5% of high school age adolescents attempt suicide within a 1-year period (CDC, 2005); higher rates are reported for female adolescents, and Latina female adolescents in particular. Nonfatal suicide attempts represent the single greatest risk factor for eventual completed suicide and incur tremendous public health costs to emergency care systems.

Although NSSI has been a focus of research efforts for several decades, particularly in the study of youths with developmental disabilities or psychosis (see Carr, 1977; Durand, 1986; Durand & Crimmins, 1988; Iwata et al., 1994), it is only recently that investigators and clinicians have examined the prevalence of these behaviors within the general population. Prevalence estimates range between 1% and 4% among nondevelopmentally disabled adults (Briere & Gil, 1998; Klonsky, Oltmanns, & Turkheimer, 2003), between 17% and 38% among college students (e.g., Gratz, Conrad, & Roemer, 2002; Whitlock, Eckenrode, & Silverman, 2006), between 12% and 21% among adolescents (Favazza, DeRosear, & Conterio, 1989; Ross & Heath, 2002; Whitlock et al., 2006; Zoroglu et al., 2003), and 7% among preadolescents in community-based samples (Hilt, Nock, Lloyd-Richardson, & Prinstein, in press). Prevalence estimates within clinical samples are notably higher (21%–61% in youths; ~21% in adults; Briere & Gil, 1998; Darce, 1990; DiClemente, Ponton, & Hartley, 1991). Although some results have suggested that women may be more likely than men to engage in NSSI (Robinson & Duffy, 1989), other studies have suggested that gender differences are not always evident, especially among adolescents (Garrison, McKeown, Valois, & Vincent, 1993; Gratz et al., 2002; Tyler, Whitbeck, Hoyt, & Johnson, 2003). Unfortunately, little data are available to reach conclusions regarding possible ethnic differences in the prevalence of NSSI that account for socioeconomic status as a potential confounding factor.

This article is dedicated to the memory of Joseph Roel, husband of Vicki DiLillo and father of Benjamin Joseph Walker Roel. Joey devoted his life, both personally and professionally, to helping people in need. His premature passing, like those of millions of others, underscores the importance of research in the area of suicide prevention.

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Both forms of self-injury (i.e., NSSI and suicidal behaviors) are particularly complex, diagnostically heterogeneous, and therefore especially difficult to understand. Self-injury occurs in the context of many different psychological disorders or even in the absence of significant psychopathology (Institute of Medicine, 2002). Past research has suggested the equifinality of self-injurious behaviors; in other words, this behavior is an outcome associated with a host of disparate risk factors or separate maladaptive developmental pathways. Research also has indicated that self-injurious behaviors are “overdetermined,” likely the result of multiple simultaneous risk processes and serving multiple functions.

Given the remarkable complexity associated with self-injurious behaviors as well as the strikingly high prevalence of all forms of self-injury (American Academy of Child and Adolescent Psychiatry, 2001; CDC, 1995, 2004; Institute of Medicine, 2002), it is not surprising that an enhanced understanding of the biopsychosocial processes that lead to self-injurious behaviors remains a high priority within funding agencies (e.g., U.S. Department of Health and Human Services, 2007). Basic science regarding self-injurious behaviors also is needed for the development of evidence-based prevention and interventions. To date, few prevention or intervention approaches for reducing NSSI or suicidal behaviors have been established or empirically supported, although several promising avenues are available (see Donaldson, Spirito, & Esposito-Smythers, 2005; King et al., 2006; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Spirito & Esposito-Smythers, 2006; Wyman et al., 2008).

Challenges to Research on Self-Injury

Despite the pressing need for more work in this area, research has progressed somewhat slowly. Many basic descriptive characteristics of self-injurious behaviors (e.g., developmental course, cultural differences in prevalence of specific behaviors) remain underexplored. Moreover, although much research has been done regarding distal risk factors/stressors or psychological diagnoses associated with later self-injurious behaviors, little is known regarding the specific processes that explain how or why individuals who experience psychopathology or stress elect to engage in self-harmful behavior. In addition, the immediate antecedents, imminent warning signs, or direct consequences of self-injury remain relatively elusive (Rudd et al., 2006). Last, few theoretical models have been offered to help understand self-injury in the manner that other manifestations of psychopathology have been examined. In particular, few studies have considered integrative models that address interplay between dynamic systems within the individual and between individuals and their environments (Magnusson & Stattin, 2006). The articles in this special section offer important advances in each of these areas.

There are several reasons why so many basic questions regarding self-injury remain somewhat unanswered. Some of these issues pertain to differences in the conceptualization and labeling of self-injury constructs in the literature. Unique logistic and ethical challenges in conducting research on self-injury also have impeded progress.

Nosology and Terminology

Semantic obfuscation has been partially responsible for the relatively slow progress of research in this area. Many different

terms have been used to describe self-injurious behaviors, and different usages of these terms across studies have made comparison of data extremely difficult (O’Carroll et al., 1996). NSSI, by its definition, includes socially unacceptable behaviors that individuals engage in without suicidal intent. In contrast, suicidal behaviors (e.g., suicide ideation, threats, plans, and attempts) involve a desire to die. Unfortunately, some common phrases used to discuss NSSI (e.g., parasuicide, deliberate self-harm, self-inflicted injury) render this distinction ambiguous, leading to some serious debate regarding the universal terms that are appropriate in discussing self-injury. This debate is based somewhat on an implicit assumption that suicide intent is appropriately conceptualized as a dichotomous variable that may be either present or absent. Some research traditions have challenged this assumption (e.g., Rodham, Hawton, & Evans, 2004), particularly when examining adolescents who themselves may report uncertainty regarding their intent to die. Thus, ironically the debate may not be fully resolved until further research has helped to better understand the constellation of interrelated behaviors that researchers have been attempting to name. Within this special section, two types of self-injurious behaviors are examined; NSSI refers specifically to those behaviors reportedly conducted without suicidal intent, whereas behaviors including a desire to die are referred to as suicidal. Thus, this special section offers an opportunity to discuss disparate self-injury constructs in a manner that reflects a consistent nosological system.

Ethical and Logistic Issues

Delayed progress advancing research in this area also is quite understandable considering the monumental challenges associated with the collection of data on self-injury. Investigators who solicit information regarding individuals’ past or current self-injurious behaviors (e.g., past suicide attempts, ongoing suicide ideation, or NSSI) face several logistic and ethical dilemmas. First, participants must be explicitly notified during informed consent procedures that their disclosure of such information may require investigators to break confidentiality and notify relatives and/or local facilities. Such notification potentially increases the possibility of underreporting biases.

Second, disclosure of information regarding self-injury presents a unique predicament and perhaps a conflict of interest between legal, ethical, and clinically indicated courses of action. Psychology ethical standards and human subjects committees require that action be taken if participants indicate imminent risk of self-harm. However, “imminent risk” often is difficult to determine from common assessment instruments designed to assess ongoing self-injurious thoughts and behaviors. For example, although research instruments may assess past frequencies of suicidal thoughts, it is atypical to collect more detailed information regarding potential risk for imminent harm that might customarily be assessed in a clinical context (e.g., assessment of a suicide plan or means).

Moreover, little is known regarding sensitivity and specificity of individual assessment instruments or the immediate conditions that may increase imminent risk (Rudd et al., 2006), thus rendering investigators with difficult decisions regarding the thresholds to use when evaluating research instruments and determining who is in need of intervention. An undercautious approach (i.e., low sensitivity) has obvious dire potential consequences. However, an

overcautious approach (i.e., high sensitivity, but perhaps also low specificity) also has potential deleterious consequences. For example, youths' reports of potential self-harm require notification of participants' parents or guardians, even in situations in which this may be clinically contraindicated. Investigators typically do not have a therapeutic relationship with parents who must be notified. Thus, investigators are less able to determine the specific manner in which parents are able to understand or process information regarding their child's potential risk, or the consequences of notification on parents' attitudes toward their children (i.e., supportive vs. punitive attitudes toward their child's disclosure). It also is typically difficult for investigators to provide the appropriate follow-up required to ensure that parents have obtained necessary services or appropriately understood the information conveyed to them. These are necessary risks when conveying information regarding clear potential for self-injury but difficult decisions to make when unsure whether data suggest a need for immediate intervention and reporting. Secondarily, it should be noted that breaking confidentiality also may have implications for individuals' willingness to accurately report their self-injurious behaviors on future assessments.

These issues do not make the collection of data on self-injury impossible; indeed, many strategies are available for collecting data on self-injurious behaviors while meeting legal/ethical guidelines and clinical recommendations (similar issues are discussed in Becker-Blease & Freyd, 2006; Mishara & Weisstub, 2005). The articles in this special section offer excellent examples. However, these challenges likely have influenced the type of data available for understanding self-injury.

Indeed, the vast majority of investigations on self-injurious behaviors have used methods that minimize the ability to identify at-risk participants and consequently many of the dilemmas involved in reporting decisions. For instance, most published reports on self-injury have involved a brief screening assessment (e.g., Child Behavior Checklist; Achenbach & Edelbrock, 1991), often including just a few self-injury items that are embedded within a larger checklist of psychological symptoms. Unfortunately, this approach often relies on available data from studies that have not been designed to examine self-injury specifically. Moreover, items used to assess self-injury often vary considerably between studies, lack validity data, and are not sufficient in number to account for measurement error. The use of few generally worded items also likely has contributed to obfuscation regarding the many different forms of self-injurious behavior and their differential courses and correlates.

Research in this area also frequently relies on the collection of anonymous data. This procedure reduces investigators' reporting responsibilities but also unfortunately makes follow-up data collection extremely difficult. Consequently, remarkably few longitudinal studies have been conducted in the area of self-injury. Low base rates of some of the constructs of interest also necessitate extremely large baseline samples to appropriately analyze clinically significant outcomes; however, practical limitations may prohibit this type of data collection. Some of these issues have been addressed by investigators using alternate methodological approaches (e.g., psychological autopsy and high-risk designs; Brent, 1989); however, additional methodological concerns nevertheless are present.

Summary

Thus, because of both conceptual and methodological challenges, research on self-injurious behaviors, including suicidality and NSSI, remains in a relatively nascent stage of development. This special section offers an excellent collection of current developments in the field, highlighting theoretical, methodological, and analytical advances that should serve as a guide for future research. Several of the articles in this section address NSSI or suicidal behaviors exclusively, whereas others examine self-injury more broadly. Data from this collection of studies also offer some information regarding self-injurious behaviors across different stages of development. In most cases, self-injury constructs examined in these articles use established measures and occasionally longitudinal methods. A brief review of the contributions to research on NSSI and suicidality is offered below.

NSSI

A large body of literature previously has examined the frequencies, types, correlates, and potential functions of NSSI (e.g., Carr, 1977; Durand, 1986; Durand & Crimmins, 1988; Iwata et al., 1994); however, this work has focused almost exclusively on individuals with developmental disabilities, such as mental retardation or pervasive developmental disorders. Over the past decade there has been a resurgence in interest in NSSI, perhaps prompted by an increasing awareness, or possibly an increasing prevalence, of NSSI among nondevelopmentally disabled individuals. Initial work examining NSSI among nondisabled populations focused specifically on the prevalence and diagnostic correlates of NSSI in a variety of other adult (e.g., Gratz, 2003) and child/adolescent populations (e.g., Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006; Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003).

More recently, investigators have offered theoretical models to better understand possible immediate antecedents, consequences, and psychological functions of NSSI (see Brown, Comtois, & Linehan, 2002; Chapman, Gratz, & Brown, 2006; Klonsky, 2007; Nock & Prinstein, 2004, 2005; Suyemoto, 1998). These models are similar to past work on NSSI within developmentally disabled populations (Durand, 1986) and prior work examining the functions of other atypical behaviors (e.g., school refusal; see Kearney, 2001). A focus of this special section is specifically on the examination of theoretical models of NSSI that may help to further elucidate functions or mechanisms that instigate or maintain NSSI behavior.

Findings from past research clearly have demonstrated that the most commonly endorsed reasons for engaging in NSSI pertain to the emotion regulation functions served by this behavior. Data suggest that in the majority of these cases, individuals engage in NSSI to suppress negative affect (i.e., an automatic negative reinforcement function [ANR]; Nock & Prinstein, 2004) or possibly self-threatening cognitions that are associated with negative affect (Chapman et al., 2006). Note that individuals also may engage in NSSI to generate feelings (i.e., automatic positive reinforcement [APR]), perhaps particularly among those experiencing psychological numbness (Nock & Prinstein, 2005). Given that NSSI may indeed serve emotion regulation functions, it is not surprising that this behavior is especially prevalent among clinical populations

with known difficulties in verbalizing and adaptively processing negative emotional states (i.e., adults with borderline personality disorder or individuals with mental retardation).

Individuals also may engage in NSSI to serve interpersonal functions (i.e., regulating the social environment; Klonsky, 2007; Nock & Prinstein, 2004, 2005; Prinstein, Guerry, Brown, & Rancourt, in press; Suyemoto, 1998; see also Kearney, 2001). NSSI may be used to suppress an unwanted social stimulus (i.e., social negative reinforcement; e.g., to reduce conflict) or to encourage a stimulus within the social environment (i.e., social positive reinforcement; e.g., to gain attention, support, or status). Social functions may be especially relevant during adolescence as interpersonal demands and stressors increase in frequency and emotional salience (Lloyd-Richardson, Nock, & Prinstein, in press; Rudolph & Hammen, 1999). However, social functions rarely have been examined in empirical studies (Prinstein et al., in press).

Testing Functional Models of NSSI

Many of the articles in this special section have continued the current tradition of examining NSSI from a functional perspective. Significantly, data from these studies begin to provide empirical support for functional models using a variety of innovative methods. For example, consistent with an initial assumption of the ANR function of NSSI, several articles in this special section indicate that adolescents and young adults who engage in NSSI indeed report and exhibit higher levels of negative affect than those without histories of NSSI (Armev & Crowther, 2008; Crowell et al., 2008; Klonsky & Olino, 2008; Nock & Mendes, 2008). Nock and Mendes (2008) have reported that adolescents with histories of NSSI also are significantly more likely than adolescents without lifetime NSSI behavior to experience psychophysiological arousal (i.e., skin conductance) following the presentation of a standardized, achievement-themed stressor. In particular, increased psychophysiological arousal was especially high among adolescents who reported high frequencies of NSSI for ANR functions (Nock & Mendes, 2008).

Also compatible with a functional perspective, Weierich and Nock (2008) have revealed that adolescents' retrospective reports of sexual abuse experiences are associated with engagement in NSSI, as mediated by hyperarousal symptoms. Individuals may engage in NSSI as a strategy for reducing these distressing symptoms of posttraumatic stress disorder (i.e., ANR function).

Armev and Crowther (2008) have further elucidated the ANR function of NSSI by examining the nature of the relationship between aversive internal experiences (i.e., negative affect and dysfunctional cognitions) and NSSI; specifically, these investigators hypothesized that this association may not be linear. Significant results from a cusp catastrophe model suggest that small changes in negative internal states may be sufficient to produce a change in a dichotomous outcome (i.e., presence/absence of NSSI) if these changes cross a critical threshold producing intolerable internal distress (Armev & Crowther, 2008).

Thus, in preliminary support of an ANR functional model of NSSI, results from several studies in the special section link the experience of negative internal experiences to NSSI and further articulate the specific types and thresholds of internal experiences that may increase risk for NSSI. This link is crucial but not sufficient support for an ANR functional model.

In addition to a link between negative affect and NSSI, the ANR function further suggests that engagement in NSSI is associated with a subsequent reduction in negative arousal, thus reinforcing the behavior. This idea also has been reflected in the special section. Welch, Linehan, Sylvers, Chittams, and Rizvi (2008) used an imagery paradigm adapted from Haines, Williams, Brain, and Wilson (1995) to test this hypothesis. Participants were read personalized scripts of different self-injury or harm scenarios. Measures of self-reported negative affect, urges to engage in self-injurious behavior, and psychophysiological indicators of distress (i.e., respiratory sinus arrhythmia and skin conductance response, indicating increased parasympathetic regulation and general autonomic arousal, respectively) were collected simultaneously. Results indicate that exposure to a NSSI script indeed led to reductions in skin-conductance response, self-reported levels of negative emotion, and self-reported urges to self-injure; however, only these latter two outcomes reduced significantly more than in control conditions. Interestingly, this pattern of results differs from those after exposure to a suicide attempt script, suggesting potential differences in the functions associated with these two disparate forms of self-injury.

Nock and Mendes's (2008) results further articulate the potential processes that may link emotional arousal following a stressor with engagement in NSSI. Results reveal that as compared with adolescents without a history of NSSI, NSSI adolescents' exposure to a stressor was associated with significantly lower levels of distress tolerance, measured with a performance-based task. NSSI adolescents also exhibited significantly poorer problem-solving skills on a performance-based measure. Last, adolescents in this study evidenced poorer social problem-solving skills post-stressor, as compared with pre-stressor, although no group differences in this decrease were observed. Together, the results suggest that stressful experiences may produce heightened emotional arousal and distress intolerance among adolescents with histories of NSSI. This disposition, in combination with poor problem-solving skills that are compromised further in the context of stress, may create the immediate antecedent conditions that produce NSSI.

However, it is important to note that not all NSSI behaviors likely occur as a strategy for ANR. Consistent with an APR function, Weierich and Nock (2008) have suggested that associations between prior sexual abuse experiences and later NSSI may alternatively be mediated by posttraumatic stress symptoms of numbing/avoidance. This finding offers preliminary support for the notion that some individuals may engage in NSSI to produce internal stimuli.

The heterogeneity of NSSI presentations and functions also is highlighted in an interesting study examining possible subgroups of young adults who report engagement in NSSI. Klonsky and Olino (2008) examined latent classes of college students on the basis of NSSI method (i.e., specific NSSI behaviors), contextual variables (i.e., presence of others during NSSI), and NSSI functions. The results suggest possibly four classes of young adults who engage in NSSI within a community sample. Two of these classes may engage in NSSI infrequently, perhaps for experimentation. Neither of these two classes reported significant levels of psychological symptoms. However, two additional groups of young adults were identified, each reporting high frequencies of NSSI and also significant levels of psychopathology. One of these groups was especially likely to (a) engage in cutting, wound

picking, and needle use; (b) engage in NSSI when alone; and (c) report emotional regulation functions of NSSI. This group also reported high levels of suicidal ideation and past suicidal behavior. A final group reported a variety of NSSI behaviors (e.g., scratching, hitting, biting) but was less likely to engage in NSSI when alone. Notably, adults in this final group reported significantly greater levels of anxiety symptoms than did others and were more likely to report social functions associated with NSSI than were others.

Such findings highlight the equifinality of NSSI and suggest that treatment strategies may need to recognize distinct pathways and correlates for engagement in apparently similar behaviors. Additional efforts toward the identification of specific subgroups of adults or adolescents with distinct correlates or characteristics of NSSI may provide important advances not only for understanding the heterogeneity of individuals who engage in NSSI but also perhaps to further elucidate processes that contribute to the equifinality of psychological symptoms and behaviors more generally.

Distal Risk Factors for NSSI

Exploration of distinct distal pathways that ultimately may lead to the development of NSSI behaviors also has been a major emphasis of research in this area and an additional theme of articles in this special section. Two articles in the special section have examined parent–child interactions that may be relevant for understanding NSSI; results from these articles contrast in intriguing ways.

Yates, Tracy, and Luthar (2008) have proposed that critical parenting may lead to the development of schemata/internal working models, suggesting that interpersonal relationships lack sufficient care or support during times of stress. This psychological framework may inhibit the development of adaptive emotion regulation skills. Consistent with their theory, cross-sectional and longitudinal data suggested that the significant association between parental criticism and NSSI was mediated by youths' reports of alienation from parents. Interestingly, a similar model was revealed for the prediction of rule-breaking behavior, suggesting that this model may not be specific to NSSI but perhaps to many outcomes that are associated with emotion dysregulation.

Crowell et al. (2008) also have examined parent–child experiences as potential predictors of NSSI; however, this study focused specifically on parent–child conflict within an observational setting. This investigation focused on Biological \times Environment interactions among adolescents with/out histories of self-injury (i.e., NSSI, but also possibly including suicidal behavior). Although Yates et al. (2008) revealed significant associations between parenting and NSSI, Crowell et al.'s results suggest no differences in parents' behaviors between adolescent groups. However, Crowell et al. did reveal that self-injuring adolescents displayed more oppositional and defiant behavior, and less positive affect, during an observed parent–child interaction than adolescents without histories of self-injury. Adolescents with histories of self-injury also had lower levels of peripheral serotonin (5-HT) than adolescents without histories of self-injury. Tests of interaction effects revealed that low 5-HT was associated with high self-injury regardless of the level of observed parent–child negativity. In contrast, high levels of adolescents' 5-HT were associated with self-injury only in the context of high parent–child

negativity. Thus, biological vulnerabilities may be especially important predictors of NSSI, and stressful environmental factors may provide a risk for NSSI among those who are not biologically vulnerable (Crowell et al., 2008).

Hilt, Cha, and Nolen-Hoeksema (2008) similarly revealed that stressful environmental experiences may serve as a risk for NSSI. In particular, preadolescent girls' (age 10–14 years) peer victimization experiences were concurrently associated with engagement in NSSI for social positive reinforcement and social negative reinforcement functions. This association was particularly potent for adolescent girls who also reported poor peer communication. Negative affect also was associated with girls' reports of NSSI for APR, particularly when negative affect was accompanied by high levels of rumination.

Summary

Collectively, the articles in this special section addressing NSSI offer an important advance in the use of creative methodologies and theoretically guided examinations of putative risk factors. These investigations provide data regarding NSSI frequencies and characteristics in samples that range in developmental level, socioeconomic status, and ethnicity. Several measurement approaches for the assessment of NSSI and its functions now are available, and research in this group of studies has benefited from the investigation of multiple types of samples, including community-based and clinically referred youths and adults, as well as adults with diagnoses (i.e., borderline personality disorder) that increase risk for NSSI. Much work is needed, however. These articles offer an excellent model for the type of work that will advance an understanding of NSSI and help to suggest additional treatment approaches.

Suicidality

As compared with the burgeoning research climate evidenced in these articles on NSSI, a much longer tradition of research on suicidality predates the publication of this special section. Still, many of the aforementioned methodological, ethical, and logistic challenges have inhibited substantial progress in understanding the course and correlates of suicidal behaviors. In particular, there has been a strong need for theoretical models that might explain how and why individuals elect to engage in suicidal behaviors and what behaviors may be either proximal predictors of suicidal behavior or predictors above and beyond the effects of suicidal ideation. Longitudinal data also are sorely needed to help understand the development of suicidal ideation. Lastly, studies examining preventive interventions are extremely valuable in attempts to reduce suicidality. This special section includes articles advancing research in each of these areas.

Theoretical Models of Suicide

Although many studies have suggested that suicidal behavior is most common among those experiencing severe symptoms of psychopathology, it is unclear why only a small proportion of those experiencing symptoms engage in suicidal behavior. In their article examining an interpersonal–psychological theory of adult suicidal behavior (Joiner, 2005, Van Orden, Witte, Gordon,

Bender, and Joiner (2008) have presented data from three studies suggesting that a unique constellation of symptoms and prior experiences may be important for identifying this at-risk subgroup. Specifically, this theory suggests that for some individuals, an interaction among (a) the experience of interpersonal loss or loneliness/isolation (i.e., referred to as thwarted belongingness), (b) individuals' perceptions of burdensomeness to others, and (c) the acquired capability to engage in self-injury (i.e., through prior NSSI, suicidal behavior, or other risk behaviors) may confer a particularly powerful risk for suicide. Results from this article suggest that an interaction between thwarted belongingness and perceived burdensomeness is associated concurrently with suicide desire within a community sample of college students; past painful and provocative experiences added significantly to the concurrent prediction of acquired capability to engage in suicidal behavior within a clinically referred sample of adults; and the interaction between perceived burdensomeness and acquired capability for suicide predicted clinician-rated suicide risk among clinically referred adults.

Proximal Predictors of Suicide

Goldstein, Bridge, and Brent's (2008) psychological autopsy study of sleep patterns among adolescent suicide completers has provided evidence for what may be a proximal predictor of suicidal behavior (i.e., a "warning sign"; Rudd et al., 2006). Results suggest that suicide completers experienced significantly more sleep difficulties than adolescents in a community control group as well as more insomnia or hypersomnia in the week prior to suicide completion than did controls, even after controlling for differences in affective disorder symptoms. Sleep difficulties may lead to suicide behavior via lower tolerance thresholds for negative affect, via compromised cognitive processing skills, or perhaps because of biological factors (serotonin levels) that are associated with sleep (Goldstein et al., 2008).

Longitudinal Data

In this special section, Prinstein et al. (2008) have presented longitudinal data on adolescent psychiatric inpatients to understand the course of suicidal ideation and behavior as well as to examine what baseline factors measured during hospitalization may be associated with increased risk for suicidal behavior following hospital discharge. The results suggest a period of sharp decreases in suicidal ideation immediately following hospitalization followed by a period of gradual reemergence by 18 months postbaseline. Consistent with Joiner's (2005) hypothesis, the results suggest that NSSI may confer later risks for suicidality; higher levels of NSSI at baseline were associated with more subtle decreases in suicide ideation immediately after discharge. The presence of a suicide plan or suicide gesture at baseline also predicted suicide attempts within 18 months after discharge, even after accounting for changes in suicidal ideation during this same period as a predictor of attempts.

Prevention Avenues

In terms of prevention, Wyman et al. (2008) implemented a gatekeeper program to increase school personnel's surveillance

and communication about suicidality within middle and high schools. Results from a randomized controlled trial reveal that those who participated in the gatekeeper training had increases in suicide risk knowledge, perceived preparedness, and access to services. Prevention participants also evidenced less reluctance to engage in gatekeeper activities. As compared with other school staff, teachers and health support staff were especially likely to gain additional knowledge regarding suicide identification behaviors as a function of the training and were most likely to communicate with students regarding potential suicide.

Summary

Collectively, the articles on suicidality contained in this special section begin to offer more refined glimpses into the specific processes that predict suicidality among youths and adults, as well as low-cost primary prevention strategies that may be useful for reducing suicidal behaviors. Although studies identifying broad risk factors for psychopathology and suicidal ideation will continue to offer an important contribution, data addressing risk factors specific to suicidal behaviors are critical and sorely needed. Studies deconstructing and/or contributing beyond suicidal ideation, elucidating mechanisms linking psychopathology to suicidal behavior, and identifying immediate suicide precursors will be essential for the prevention of suicide.

Overall Summary and Conclusions

The articles in this special section offer great strides forward in the understanding of NSSI and suicidality, with specific potential directions for prevention and intervention avenues. Future work in this area hopefully will pursue two simultaneous fronts.

First, more basic theory and research are needed to understand the complexity of this sometimes sudden and unforeseeable behavior and to understand trajectories that may portend future self-injury risk. If indeed NSSI is a behavior that helps individuals regulate emotions, it will be important to understand why individuals choose these particular behaviors to regulate emotions rather than other adaptive, or even other maladaptive, emotional regulatory behaviors. Perhaps an attainable preliminary approach to reducing NSSI will be to help individuals redirect their emotional dysregulation toward more safe coping strategies while simultaneously addressing underlying or distal factors that give rise to emotional dysregulation itself (e.g., Linehan et al., 1991). The examination of short-term predictors of suicidality similarly may offer helpful clinical strategies. With some thoughtful consideration, most individuals can imagine a certain set of life experiences that may lead to an immediate, severe, and seemingly insurmountable desire to end one's life. Yet most who ensure such severe tragedies nevertheless do not engage in suicidal behavior. Basic research understanding resilience, stress appraisals, coping strategies, and tolerance for negative affect may be especially useful for better explaining the moments that lead individuals to engage in, or refrain from, suicidal acts.

Second, in addition to work on basic science, randomized controlled clinical trials urgently are needed to examine the efficacy and then the effectiveness of possible prevention and interventions to reduce forms of self-injury. Such work is accompanied by substantial methodological and ethical challenges (e.g., the selec-

tion of control conditions, protection from iatrogenic effects) and will require substantial resources. Yet, the possibilities for reducing one of the leading causes of death are worthy of our field's greatest efforts.

In sum, self-injury remains a remarkably challenging area for scientific inquiry and clinical modification. As reflected in the articles in this special section, self-injurious behavior typically does not occur as a phenomenon or disorder unto itself but rather as a manifestation of severe distress and/or psychopathology. The study of self-injury therefore offers intriguing potential not only for reducing extremely dangerous behavior and mortality but perhaps also for understanding the very nature of psychopathology, the psychological functions of maladaptive behaviors, and the manner in which humans might uniquely respond to stressors. Research on self-injury benefits from the collaboration of many disciplines and the integration of theories and methods from multiple psychological disciplines. There is promise and great potential for clinical science to offer an extremely necessary contribution toward the reduction of these tragic behaviors.

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