Risk Factors for and Functions of Deliberate Self-Harm: An Empirical and Conceptual Review

Kim L. Gratz, University of Massachusetts, Boston

Given the clinical importance of deliberate self-harm and the need for further research informing the treatment and prevention of this behavior, a review of the extant literature on the risk factors for and functions of self-harm is needed. In this article, I review empirical and theoretical literature on the following potential risk factors for self-harm: childhood sexual and physical abuse, neglect, childhood separation and loss, security of attachment to caregivers, and emotional reactivity and intensity. Literature on the emotion regulating function of self-harm behavior is also reviewed. Future research is needed on the interaction of individual and environmental risk factors in the development of self-harm, as well as on the experientially avoidant function of this behavior.

Key words: **deliberate self-harm, self-mutilation, self-injury, emotion regulation, childhood trauma.** ***[Clin Psychol Sci Prac 10: 192–205, 2003]***

Deliberate self-harm may be defined as the deliberate, *direct* destruction or alteration of body tissue, without conscious suicidal intent but resulting in injury severe enough for tissue damage to occur. Individuals at risk for self-harm often report experiencing chronic emptiness, alienation, and isolation in combination with intense, overwhelming negative emotions (Connors, 1996; Favazza & Conterio, 1988, 1989; Leibenluft, Gardner, & Cowdry, 1987). However, although some of the consequences of self-harm behavior are negatively reinforcing (e.g., the reduction in tension that follows; Haines, Williams, Brain, & Wilson, 1995), others may inadvertently increase the emotional pain and isolation of the self-harming individual. For example, because self-harm behavior often arouses intense negative reactions in others (both clinicians and the general public; Barstow, 1995; Clarke & Whittaker, 1998; Conterio & Lader, 1998; Favazza, 1998; Feldman, 1988; Linehan, 1993; Tantam & Whittaker, 1992; Walsh & Rosen, 1988), the potential exists for it to disrupt interpersonal relationships both in and out of therapy, thereby further contributing to social isolation and resultant distress. Moreover, the shame, guilt, and regret that often follow an act of self-harm may exacerbate the negative emotional arousal of the individual, as well as increase the likelihood of further isolation (Leibenluft et al., 1987; Schwartz, Cohen, Hoffmann, & Meeks, 1989). The negative physical consequences of self-harm (e.g., scars) may also result in shame, necessitate greater isolation from others, or both (Favazza, 1989a).

Despite the clinical importance of deliberate self-harm, empirical research informing the treatment and prevention of this behavior has been limited. Two areas of research that have implications for the treatment and prevention of self-harm are the risk factors for, and functions of, this behavior. Furthermore, as research in each of these areas informs the other, their concurrent examination is useful. Because most empirical literature on self-harm has focused on the risk factors for this behavior, this review will begin by examining the following potential risk factors for self-harm: (1) childhood sexual abuse, (2) childhood physical abuse, (3) neglect, (4) childhood separation and loss, (5) affective quality and security of childhood attachment relationships, and (6) individual risk factors (e.g., emotional reactivity and intensity). A review of the literature on the emotion regulating function of self-harm will then follow. Given the limited amount of empirical research in some of these areas, however, one of the primary purposes of this

Address correspondence to Kim L. Gratz, Department of Psychology, University of Massachusetts, Boston, 100 Morrissey Blvd., Boston, MA 02125. E-mail: klgratz@aol.com.

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review will be to provide a conceptual framework for future research. This framework will be informed by both the extant empirical literature on self-harm and Linehan's (1993) theoretical work on the development of borderline personality disorder (BPD), of which self-harm is often an associated behavior (see, e.g., Dubo, Zanarini, Lewis, & Williams, 1997; Linehan, 1993). However, given empirical evidence that self-harm occurs among nonclinical as well as clinical populations (see Gratz, 2001), this article will focus on self-harm in general (as opposed to self-harm among individuals with a diagnosis of BPD).

Because the only criterion for inclusion in this article was that a study examine self-harm behavior as defined below, the studies reviewed include both clinical and nonclinical samples, as well as both female and male participants. However, because most of the empirical and theoretical literature in this area has focused on women with a history of some form of psychiatric treatment, the extent to which the conclusions drawn from this review can be generalized to other populations (such as men) is likely limited. Before examining the relevant literature, I will provide the definition of self-harm on which this article is based, because there is currently little consensus among researchers on how to define deliberate self-harm behavior.

DEFINITION OF DELIBERATE SELF-HARM

One source of inconsistency in the extant literature is the interchangeable use of the terms *deliberate self-harm, self-injury,* and *self-mutilation* to denote the same phenomenon (see, e.g., Baral, Kora, Yuksel, & Sezgin, 1998; Brodsky, Cloitre, & Dulit, 1995; Dulit, Fyer, Leon, Brodsky, & Frances, 1994; Simeon et al., 1992; Winchel & Stanley, 1991). For instance, in some of the seminal work on this phenomenon, Pattison and Kahan (1983) and Favazza (1998) describe a similar set of behaviors involving the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent, such as skin cutting, carving, burning, severe scratching, needle sticking, and interference with wound healing. Although they appear to describe the same phenomenon, however, they refer to it differently. Specifically, Pattison and Kahan (1983) use the term deliberate self-harm while Favazza (1998) refers to the behavior as episodic or repetitive superficial-moderate self-mutilation.

Another source of inconsistency is the use of the term deliberate self-harm to describe different types of behaviors. For example, although many researchers using the term deliberate self-harm distinguish between self-harm and suicide-related behaviors, conceptualizing self-harm as antithetical to suicide attempts (e.g., Boudewyn & Liem, 1995; Pattison & Kahan, 1983; Sabo, Gunderson, Najavits, Chauncey, & Kisiel, 1995), others have not distinguished between these behaviors (e.g., Goddard, Subotsky, & Fombonne, 1996; Gupta, Sivakumar, & Smeeton, 1995; Martin & Waite, 1994; Myers, 1988; Pettigrew & Burcham, 1997; A. L. Pillay & Y. G. Pillay, 1987; Romans, Martin, Anderson, Herbison, & Mullen, 1995). Similarly, other researchers use terms that do not distinguish between self-harm and suicide attempts (e.g., Linehan, 1993, who uses the term *parasuicide* to refer to both types of behaviors).

Although it may be difficult at times to distinguish between self-harm behavior and suicide attempts, given that there are likely cases of self-injurious behaviors for which the intent to die is ambiguous (i.e., behaviors for which the individual expresses ambivalence as to their intent), there may be reason to do so whenever possible. For instance, despite the frequent comorbidity of these behaviors, research has found that self-harming individuals who attempt suicide tend to do so at times when they are *not* actively self-harming and by engaging in behaviors that are not classified as deliberate self-harm (e.g., overdosing; see Schwartz et al., 1989; Walsh & Rosen, 1988). Also, many individuals with a history of self-harm do not report a history of suicide attempts (e.g., 41% of a sample of self-harming female adolescents and 31% of a sample of predominantly female inpatients with BPD; see Schwartz et al., 1989, and Dulit et al., 1994, respectively). Furthermore, given the apparent difference in function of these behaviors (i.e., to regulate emotions and to end life), their distinction may have important treatment implications.

The present article defines deliberate self-harm as the deliberate, direct destruction or alteration of body tissue, without conscious suicidal intent but resulting in injury severe enough for tissue damage (e.g., scarring) to occur. This term denotes the behaviors often described as deliberate self-harm or as episodic/repetitive superficial-moderate self-mutilation (Pattison & Kahan, 1983, and Favazza, 1998, respectively), and distinguishes between self-harm behavior and suicide attempts. In order to promote consistency and avoid confusion, I will use the term deliberate self-harm exclusively to represent these behaviors, regardless of the specific term used by the original researchers. In the rare instances when the results of a study

using a less exclusive definition of self-harm than that proposed here are reviewed, this discrepancy will be explicitly noted and the definition of self-harm used in the study will be described.

RISK FACTORS FOR DELIBERATE SELF-HARM

Most empirical research on self-harm has focused on the risk factors for this behavior, most often examining the childhood experiences associated with risk for self-harm in adulthood. Theoretical literature on the development of self-harm suggests specifically that it is childhood experiences that take place within the context of the family that are most likely to be associated with self-harm, whether in the form of a dysfunctional family background (Suyemoto, 1998), the experience of father-daughter incest (Shapiro, 1987), abuse in the context of pathological family relationships (Green, 1978; Tantam & Whittaker, 1992), or some interaction of childhood trauma, neglect, and insecure attachment (van der Kolk, 1996). Similarly, Linehan's (1993) theoretical work on the development of BPD suggests the role of early childhood experiences in the development of self-harm. In particular, she suggests that the emotion dysregulation that underlies BPD and may lead to behaviors such as self-harm results from the interaction of individual biological vulnerabilities and an invalidating environment. This invalidating environment may take one of several forms, including (1) childhood sexual abuse, (2) families in which little time or attention is given to children, and (3) families in which negative emotional displays by children are punished.

Despite suggestions by Linehan (1993) and other researchers (see e.g., Green, 1978; van der Kolk, 1996) that it is likely the interaction of risk factors that contributes to self-harm behavior, research has most often focused on one or two of the environmental risk factors thought to be related to self-harm (see, e.g. Zlotnick et al., 1996). In addition, although some studies (see, e.g., Boudewyn & Liem, 1995; Gratz, Conrad, & Roemer, 2002; van der Kolk, Perry, & Herman, 1991; Zweig-Frank, Paris, & Guzder, 1994a, 1994b) have examined a more extensive range of environmental risk factors and their interrelationships, no known studies have examined the ways in which these risk factors might interact to influence self-harm behavior. Moreover, the role of individual risk factors in the development of self-harm has received limited systematic attention from researchers.

What follows is a review of the empirically tested main effects of certain childhood risk factors. In addition, theoretical support for examining the role of additional risk factors (including aspects of the caregiving relationship and individual differences in emotional responding), as well as the interaction of individual and environmental risk factors, in the development of self-harm will be presented.

Childhood Sexual Abuse

Childhood sexual abuse has received the most systematic attention from researchers exploring the risk factors for self-harm, and the preponderance of evidence suggests that there is a relationship between childhood sexual abuse and self-harm in adulthood (Boudewyn & Liem, 1995; Gratz et al., 2002; van der Kolk et al., 1991; Wonderlich et al., 1996; Zlotnick et al., 1996). However, these studies differ in the extent to which they controlled for the impact of other variables, and thus in the extent to which they provide evidence of a *unique* relationship between sexual abuse and self-harm. Studies examining the zero-order relationship between sexual abuse and later self-harm have consistently found evidence of a significant association between these factors. For instance, van der Kolk et al. (1991) examined the zero-order relationships between different forms of childhood trauma and self-harm behavior among a mixed clinical-community sample of female and male participants, concluding that not only was sexual abuse significantly associated with self-harm, it was more strongly related to this behavior than other forms of childhood trauma (i.e., physical abuse and witnessing domestic violence). However, as the significance of the differences in the size of the correlations was not directly computed, the relative strength of the relationship of sexual abuse (versus the other forms of trauma) to self-harm is indeterminable. Also examining the zero-order relationship of sexual abuse and self-harm, Zlotnick et al. (1996) found that rates of childhood sexual abuse were significantly higher among female inpatients with a history of self-harm, as opposed to those without a history of self-harm. Similarly, Wonderlich et al. (1996) found that female outpatients with a history of sexual abuse were more likely than those without a history of sexual abuse to report a history of self-harm.

Given that one possible explanation for findings of a relationship between self-harm and childhood sexual abuse may be the relationship of each to some third variable (such

as emotional neglect), further elaboration of this relationship may be obtained by considering the results of studies that have examined the relationship between childhood sexual abuse and self-harm while controlling for the impact of other potentially distressing childhood experiences. Boudewyn and Liem (1995) examined the relationship between self-harm behavior and childhood sexual abuse among a sample of 438 college students from urban universities. They found that of the 46 students in their sample reporting a history of deliberate self-harm, 52% ($n = 24$) of these students had been sexually abused as children. Also, of the 34 individuals reporting a history of repeated self-harm, 59% ($n = 20$) had been sexually abused. Finally, when several potentially distressing childhood experiences (including separation, loss, and physical, emotional, and sexual abuse) were entered into a regression equation predicting acts of deliberate self-harm, only childhood sexual abuse emerged as a significant predictor of self-harm, thus providing some evidence of its unique relationship to self-harm.

These results are consistent with findings of a recent study on the risk factors for self-harm behavior among a sample of 133 psychology students from a large, public urban university (Gratz et al., 2002). Like Boudewyn and Liem (1995), Gratz et al. (2002) examined the unique predictive value of several hypothesized risk factors for self-harm, including childhood sexual abuse, childhood physical abuse, childhood separation, maternal and paternal emotional neglect, insecure maternal and paternal attachment, and dissociation. They found that, controlling for the effects of the other variables, sexual abuse remained a significant predictor of self-harm among women. However, sexual abuse was not related to self-harm behavior among men. Because this finding is based on a relatively small number of men, it must be considered preliminary; nonetheless, a possible explanation for the absence of such a relationship may be that most of the sexually abused men reported one incident of sexual abuse (whereas sexually abused women commonly reported multiple events).

Contradictory findings were reported by Zweig-Frank et al. (1994b). Although the researchers found evidence of a significant zero-order relationship between childhood sexual abuse and self-harm behavior among female outpatients, they concluded that there may not be a unique association between sexual abuse and self-harm after conducting a logistic regression with BPD diagnosis included as a predictor and observing that BPD diagnosis was the only significant predictor of self-harm in the multivariate model. However, there are other likely explanations for this finding. For instance, the inclusion of BPD diagnosis as a predictor in the regression equation removes variance in self-harm behavior that may be attributable to childhood sexual abuse, because BPD and childhood sexual abuse are themselves correlated (Herman, Perry, & van der Kolk, 1989; Ogata et al., 1990). In addition, there is a high likelihood that the predictive power of childhood sexual abuse will be masked by the inclusion of BPD diagnosis as a predictor, given that the predictive power of this diagnosis will necessarily be inflated because recurrent self-harm behavior is one of its criteria. Thus, their absence of *findings* of a unique relationship between childhood sexual abuse and deliberate self-harm behavior may not reflect the absence of an *actual* relationship between these phenomena, especially in light of the numerous studies that have found an association between self-harm and childhood sexual abuse.

It is also important to note that not all childhood sexual abuse is the same, and different types of experiences are likely associated with different outcomes. For instance, Rind, Tromovitch, and Bauserman (1998) highlight the importance of breaking down childhood sexual abuse more carefully when examining its consequences, and identifying the specific aspects of abuse most closely associated with long-term negative consequences. Thus, future research focusing on the relationship between childhood sexual abuse and self-harm may benefit from a more in-depth investigation of the aspects of childhood sexual abuse that are more or less strongly associated with self-harm behavior, including (but not limited to) frequency, severity, and relationship of the perpetrator to the survivor.

Childhood Physical Abuse

Results of studies examining the relationship between childhood physical abuse and self-harm are inconclusive, providing mixed evidence for this relationship among both clinical and nonclinical populations. Green (1978) found that physically abused children engaged in significantly more self-destructive behavior (including deliberate self-harm) than physically neglected children or "normal controls" with no history of physical abuse. However, research examining the relationship between childhood physical abuse and self-harm during adulthood has produced mixed

results. Although Zweig-Frank et al. (1994b) found no significant differences in rates of childhood physical abuse between female outpatients with and female outpatients without a history of self-harm, Carroll, Schaffer, Spensley, and Abramowitz (1980) found significantly higher rates of childhood physical abuse among patients with a history of self-harm. The aforementioned study by Gratz et al. (2002) found a significant zero-order relationship (r = .26) between physical abuse and self-harm among female college students, and a relationship of comparable magnitude (r = .25) among male college students. Although this relationship was not statistically significant among the male college students, this was likely the result of the relatively small number of men in the sample (n = 44).

As for the *unique* association between childhood physical abuse and self-harm (when controlling for the impact of other potential risk factors), the results of Gratz et al. (2002) suggest that this relationship may be moderated by gender. Physical abuse did not contribute uniquely to the prediction of self-harm among female college students, possibly because of the strong association between physical and sexual abuse (ϕ = .44, $p < .001$) among the female participants (see Gratz, 2000), whereas it did account for a unique 4% of the variance in self-harm behavior among male college students. As before, the fact that this finding failed to reach statistical significance is likely due to the relatively small number of male participants. Given some evidence of a significant (albeit not always unique) association between physical abuse and self-harm, the possibility that childhood physical abuse may be a risk factor for later self-harm should not be ruled out.

Neglect

The role of neglect as a risk factor for self-harm has been studied less systematically than childhood abuse, and the results of the few studies that have examined this relationship are inconsistent. One source of this inconsistency may be the way in which neglect has been operationally defined (i.e., the forms of neglect that have been examined by researchers). For instance, van der Kolk et al. (1991) defined neglect as either physical or emotional and found that neglect, in general, was a powerful predictor of self-harm among a mixed clinical-community sample. Baral et al. (1998) defined neglect in the same way and reported that they found "partial support" for the relationship between neglect and deliberate self-harm among a sample of female outpatients (although in the absence of either specification of the actual finding or further explanation of the meaning of "partial support," this report must be interpreted cautiously). Dubo et al. (1997), on the other hand, distinguished between emotional and physical neglect and found that the strength of the relationship between self-harm and neglect among a sample of inpatients varied as a function of the type of neglect. Specifically, findings suggest that emotional neglect was the strongest predictor of deliberate self-harm (in comparison to childhood sexual and physical abuse), whereas physical neglect was not a significant predictor of deliberate self-harm for their sample. Thus, there is some evidence that emotional neglect may be a significant predictor of deliberate self-harm, more closely related to this behavior than physical neglect.

The relationship between emotional neglect and deliberate self-harm has also been examined in studies using the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), a self-report measure of maternal and paternal emotional neglect. However, the results of these studies are also inconsistent. Martin and Waite (1994) found that both maternal and paternal emotional neglect were significantly positively associated with deliberate self-harm among a nonclinical sample of female and male adolescents. However, their definition of deliberate self-harm encompassed both self-harm and suicidal behavior and is therefore not consistent with the definition of self-harm used here. Zweig-Frank et al. (1994a, 1994b), on the other hand, did not find maternal or paternal emotional neglect to be significantly related to self-harm among female or male outpatients with BPD (although the fact that both self-harm and emotional neglect may have a restricted range among a clinical sample with BPD may, in part, account for the absence of a significant relationship between the two).

In contrast, Gratz et al. (2002) found gender differences in the relationship between emotional neglect and self-harm. Neither maternal nor paternal emotional neglect was associated with self-harm among male college students, whereas both were significant predictors of self-harm behavior among female college students (when controlling for the effects of other risk factors). Interestingly, although maternal emotional neglect was a positive predictor as expected, paternal emotional neglect was negatively associated with self-harm within the multivariate model (a finding in contrast to the *positive* but nonsignifi-

cant zero-order correlation observed between paternal emotional neglect and self-harm). Together, these findings suggest that once the positive relationships between self-harm and the other risk factors (such as insecure paternal attachment) have been accounted for, the unique contribution made by paternal emotional neglect to the prediction of self-harm is negative (i.e., in the presence of the other risk factors, paternal emotional neglect may be a protective factor). One possible explanation for this finding is that reported lack of paternal emotional neglect may have reflected a history of emotional overinvolvement for some women; therefore, scores thought to reflect paternal neglect would also reflect the *absence* of emotional overinvolvement (the absence being a possible protective factor).

Despite mixed results from studies examining the relationship between neglect and self-harm, research in related areas suggests that this relationship warrants continued examination. For instance, there is some evidence that childhood neglect (both emotional and physical) may have serious negative consequences for later ego control (i.e., the degree to which individuals usually express their impulses, encompassing both affect regulation and behavioral inhibition or regulation; Kremen & Block, 1998), affect expression, and emotion regulation (Crittendon, 1992; Egeland & Sroufe, 1981b; Egeland, Sroufe, & Erickson, 1983; Kogan & Carter, 1996), all of which have been implicated as potential risk factors for deliberate self-harm behavior (see Conterio & Lader, 1998; Herpertz, Sass, & Favazza, 1997; Linehan, 1993; McLane, 1996; van der Kolk, 1996; Virkkunen, 1976; Zlotnick et al., 1996).

However, as in the previous discussion that the relationship between sexual abuse and self-harm could be the result of the relationship of each to another variable (e.g., emotional neglect), it is also possible that the relationship between emotional neglect and self-harm might be the result of the relationship of each of these variables to some other third variable, such as a genetic predisposition to impulsivity (see, e.g., Winchel & Stanley, 1991). That is, impulsive parents may be more likely to create an atmosphere of neglect, and impulsive children may be more at risk for self-harm.

Childhood Separation and Loss

Limited empirical research has examined the relationships between self-harm behavior and childhood separation and loss. However, case studies suggest a relationship between prolonged separation from a caregiver or loss of a parent and later self-harm behavior (Levenkron, 1998), and there is some empirical support for this as well (Carroll et al., 1980; Gratz et al., 2002; Walsh & Rosen, 1988). For example, Gratz et al. (2002) found that childhood separation was the most significant predictor of self-harm among male college students, accounting for 12% of the variance in this behavior. As the majority of men reporting childhood separation were physically separated from their fathers, this finding suggests only the potential risk associated with this specific form of separation among men (although more research in this area is obviously needed).

Affective Quality and Security of Childhood Attachment Relationships

Even among individuals with no history of abuse, neglect, or separation, there are aspects of the parent-child relationship that may have important consequences for later adjustment, thereby possibly affecting the risk for later self-harm. For instance, there is empirical evidence that individual differences in the quality of the emotional bond formed between parent and child (i.e., the affective quality and security of the attachment relationship) may have important implications for later adult adjustment and risk for psychopathology (e.g., Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997; Styron & Janoff-Bulman, 1997).

Despite the apparent clinical relevance of this area of inquiry, there is a remarkably limited amount of literature addressing the association between self-harm behavior and perceived quality and security of attachment relationships to parents. One study that addressed this issue inferred quality of attachment from reports of neglect and separation (van der Kolk et al., 1991). However, research has found that a subset of maltreated children are able to form secure attachments to one of their parents or a substitute caregiver (Cicchetti & Barnett, 1991; Crittendon, 1992; Egeland & Sroufe, 1981a), and literature on the consequences of childhood separation provides evidence of many instances in which children were able to form secure attachments with the remaining parent or a substitute caregiver (Hayashi & Strickland, 1998; Hetherington, 1989). In a more direct examination of this relationship, Gratz et al. (2002) examined the role of insecure parental attachment in self-harm behavior, while controlling for the impact of other aspects of the parental relationships, including emotional neglect and abuse. Although neither insecure

maternal attachment nor insecure paternal attachment was a significant predictor of self-harm among male college students, insecure paternal attachment accounted for a significant amount of unique variance in self-harm behavior among female college students. However, given that the measure of parental attachment used in this study was a retrospective, self-report measure of attachment security during childhood, these findings must be considered preliminary and in need of replication.

Support for the suggested relationship between self-harm and insecure attachment is provided by empirical research in other areas. Specifically, research suggests that secure attachment to a caregiver can provide protection from the most severe negative consequences of childhood separation and loss (Hayashi & Strickland, 1998; Heinzer, 1995; Hetherington, 1989), and, conversely, that insecure attachment to a caregiver can compound the effects of childhood abuse, leading to even more detrimental consequences (see, e.g., Beeghly & Cicchetti, 1994; Wekerle & Wolfe, 1998). Therefore, although no definite conclusions about the role of insecure attachment in self-harm behavior can be drawn at this time, the limited research that exists suggests that the relationship between security of attachment and self-harm warrants further investigation.

Individual Risk Factors

As for the role of individual risk factors in the development of self-harm, empirical research is limited. However, Linehan's (1993) theoretical work highlights the role of certain individual factors that may increase the risk for later self-harm behavior. Linehan suggests that an individual biological vulnerability contributes to the emotion dysregulation underlying self-harm. The specific biological vulnerability to which she refers is emotional vulnerability in the form of emotional reactivity (i.e., high sensitivity to emotional stimuli) and emotional intensity (i.e., the tendency to have extreme reactions). It is important to note as well that this biologically based emotional vulnerability could result from a variety of influences (including, but not limited to, genetic influences, aversive intrauterine events, or early childhood experiences) that impact the development of the brain and central nervous system, thus not requiring the complicated determination of the specific cause (genetic versus environmental) of emotional reactivity and intensity. Although the role of emotional reactivity and intensity in the development of self-harm has not yet been examined empirically, future attention to this relationship may help elucidate the likely complex etiology of self-harm behavior.

Interaction of Risk Factors

Although no known studies have examined the ways in which risk factors may interact to influence the development of self-harm behavior, theoretical literature suggests interactions among several of the childhood risk factors that may increase the risk for later self-harm behavior, including the interactions of (1) childhood physical abuse, emotional neglect, and psychological abuse (Green, 1978); (2) childhood trauma, neglect, and insecure attachment (van der Kolk, 1996); and (3) childhood sexual abuse and an invalidating family environment (Linehan, 1993). Similarly, attachment literature suggests that the combination of maltreatment and insecure attachment (as opposed to either maltreatment or insecure attachment in isolation) predicts more negative consequences and poorer functioning (Beeghly & Cicchetti, 1994). Moreover, Linehan's (1993) assertion that particular invalidating environments interact with emotional vulnerability to increase the likelihood of emotion dysregulation and related behaviors (such as self-harm) highlights the need for empirical research examining the interaction of environmental and individual risk factors in the development of self-harm behavior.

FUNCTIONS OF DELIBERATE SELF-HARM

Linehan's (1993) description of the development of BPD also suggests the potential function of self-harm behavior. Specifically, Linehan suggests that the way emotional vulnerability and invalidating environments interact to influence the development of self-harm is through their impact on emotion dysregulation. For instance, invalidating environments during childhood may contribute to the development of emotion dysregulation by failing to teach effective regulatory strategies for managing emotional arousal and tolerating emotional distress (Linehan, 1993). Moreover, childhood trauma in the form of physical abuse, sexual abuse, or both may contribute to chronic hyperarousal and, consequently, increased risk for emotion dysregulation (given that high levels of arousal are more difficult to regulate; see Eisenberg, Cumberland, & Spinrad, 1998; Flett, Blankstein, & Obertynski, 1996). In addition, emotional vulnerability in the form of emotional reactivity and intensity may also contribute to emotion dysregulation (see Calkins & Johnson, 1998; Eisenberg et al., 1998; Melnick & Hinshaw, 2000; Thompson, 1994), as

more intense emotions pose a greater challenge for emotion regulation (Flett et al., 1996). Thus, the interaction of these factors increases the likelihood of emotion dysregulation, which, in turn, increases the risk for deliberate self-harm (as self-harm may function to regulate painful emotions that cannot be tolerated; see Linehan, 1993).

Although Linehan's (1993) theoretical work offers the most detailed and comprehensive description of the emotion regulating function of self-harm behavior, other researchers have also conceptualized self-harm as an emotion regulation strategy (see Haines & Williams, 1997; van der Kolk, 1996)—a conceptualization supported by clinical and empirical literature. Given the relative dearth of empirical research on the functions of self-harm, most of the extant literature on this topic is clinical in nature, consisting of clinical observations and the nonsystematic description of the self-reported functions of self-harming clients. This clinical literature indicates that deliberate self-harm may function in one or more of the following ways: (1) to relieve anxiety; (2) to release anger; (3) to relieve unpleasant thoughts and feelings; (4) to release tension; (5) to relieve feelings of guilt, loneliness, alienation, self-hatred, and depression; (6) to externalize and concretize emotional pain; (7) to provide an escape from emotional pain; (8) to provide a sense of security; (9) to provide a sense of control; (10) to self-punish; (11) to set boundaries with others; (12) to terminate depersonalization and derealization; (13) to end flashbacks; and (14) to stop racing thoughts (Connors, 1996; Coons & Milstein, 1990; Favazza, 1989b, 1992; Favazza, DeRosear, & Conterio, 1989; Greenspan & Samuel, 1989; Kennerley, 1996; Lyons, 1991; Shapiro, 1987). Although no data are available on the number of ways in which self-harm may function for any given individual, researchers have suggested that self-harm is likely an overdetermined behavior, serving multiple functions simultaneously (Suyemoto, 1998).

Empirical literature is consistent with this clinical literature. For instance, Favazza and Conterio (1989) examined the self-reported functions of self-harm among a community sample of 240 self-selected females with a history of this behavior. Among these participants, self-harm functioned to facilitate relaxation, control racing thoughts, and relieve feelings of depression, loneliness, and derealization. However, the authors did not specify whether the participants were allowed to describe (by means of an open-ended question) the functions of their self-harm behavior, or whether they were forced to choose from a list of alternatives provided by the researchers—a factor that may have implications for the validity of the results.

Briere and Gil (1998) also examined the functions of self-harm among a group of 93 self-identified (predominantly female) individuals with a history of this behavior (the vast majority of whom also had a history of sexual abuse). These individuals were asked to select the functions of their self-harm from a list of reasons commonly provided by self-harming clients for this behavior. The participants selected a wide variety of functions for their behavior, including self-punishment, distraction from and release of painful feelings, management of stress, reduction of tension, release of anger, and enhancement of feelings of self-control (each endorsed by more than 70% of the self-harming individuals). A factor analysis performed on the reasons for self-harm cited by more than 20% of the participants resulted in nine factors, leading the researchers to conclude that the self-harm behavior of the participants in their study functioned to (1) decrease dissociative symptoms such as depersonalization, (2) prevent flashbacks and upsetting memories, (3) reduce stress and tension, (4) express distressing emotions, (5) provide a sense of safety and protection, (6) reduce anger, (7) punish the individual, (8) show others that the individual needed help, and (9) protect the individual from hurting others.

Briere and Gil's (1998) use of a close-ended questionnaire to assess the functions of self-harm may be premature in light of the relative lack of empirical research on the functions of this behavior. Results of a qualitative study that used open-ended interviews to assess the functions of self-harm behavior (Gratz, 2000) may help elaborate upon their findings. Despite the study's limited sample (21 college students with a self-identified history of self-harm behavior), the results were comparable to those reported by Briere and Gil (1998), as well as Favazza and Conterio (1989). Specifically, Gratz (2000) found that the most frequently described function of self-harm was to relieve unwanted feelings, reported by 76% of the participants. These participants reported that self-harm relieved feelings of stress, anger, frustration, sadness, emotional upset, tension, anxiety, grief, emotional pain, and being overwhelmed. Consistent with the aforementioned clinical literature, participants also reported that self-harm externalized emotional pain, thereby making the pain more physical and tangible, and thus less abstract and easier to understand. Participants also noted that self-harm provided an escape, a way to forget about worries and fears, and a way to divert

attention from painful internal experiences. According to participants' reports, self-harm also functioned to express feelings of self-hatred, to self-punish, to provide a sense of control, and to prove something to the individuals (e.g., that they were capable of doing something or that they were tough enough to endure pain). Finally, for six participants (29%), self-harm functioned as a way to communicate with others, including showing others that they were hurting and setting boundaries with others.

Interestingly, and somewhat inconsistent with the clinical and empirical data already described, one of the most frequently cited functions of self-harm within the general literature in this area is the elicitation of a caring response from others (Conterio & Lader, 1998; Favazza, 1992)—a function often described as a means of manipulating or coercing others into providing love or attention (Barstow, 1995; Feldman, 1988; Schwartz et al., 1989). This is the function that historically has been attributed to most self-harm behavior, contributing to the common belief that individuals who engage in this behavior are manipulative and attention seeking (Feldman, 1988; Tantam & Whittaker, 1992). However, researchers have recently begun to address the fact that this negative belief about the function of self-harm is most likely a misconception.

First, self-harm is often a private and secretive act, with many individuals choosing to conceal this behavior from others (Conterio & Lader, 1998; Favazza, 1992). In these instances the purpose of this behavior could not possibly be to manipulate others or gain attention, suggesting that, at the very least, the function of self-harm is not always interpersonal in nature. Also, some researchers argue that even in the case of individuals who harm themselves in the presence of others, it may not be accurate to conceptualize their behavior as manipulative. According to Linehan (1993), who thoughtfully argues against conceptualizing the parasuicidal (including self-harming) behavior of individuals with BPD as manipulative, the fact that the self-harm behavior of an individual may influence others does not mean that this was the intent of the behavior, as "function does not prove intention" (p. 17).

Linehan's (1993) argument is very similar to Levenkron's (1998) discussion of "secondary gain" (p. 111), in which eliciting a caring response or influencing others is not the intent or primary goal of the behavior but may end up reinforcing the behavior nonetheless. The benefit of framing the interpersonal function of self-harm behavior in this way is that doing so separates the conscious intent of the behavior from the unintended but still possibly reinforcing outcome of the behavior, consequently challenging the stereotype that self-harm behavior and the individuals who engage in it are manipulative.

Moreover, within the empirical research on the functions of self-harm, the elicitation of a caring response from others is not the most frequently cited function of self-harm among self-harming individuals themselves. For example, Gratz (2000) found that less than one third of participants ($n = 6$) reported that self-harm functioned to get the attention of others, and half of these participants ($n = 3$) seemed unsure as to whether this was actually one of the functions of their behavior. Conversely, self-harm was also described by three participants as a means to push people away and make others leave them alone. Similarly, Briere and Gil (1998) found that although 40% of their sample reported engaging in self-harm to get attention or help from others, the majority of self-harming individuals (more than 70%) endorsed the intrapersonal functions of self-punishment, enhancement of self-control, and relief from painful feelings, stress, tension, and anger. Favazza and Conterio (1989) do not report that obtaining the care or attention of someone was one of the functions of self-harm described by the participants in their study; however, it is unclear whether this function was even an option provided to participants. Related to this topic, though, only 20% of the participants in their study endorsed the statement that they liked the attention resulting from self-harm.

Although clinical and empirical data lend support to Linehan's (1993) theory that self-harm serves an emotion regulating function, knowing the particular way in which self-harm may operate to regulate emotions would add depth to an understanding of its function (considering that emotion regulation strategies may take a variety of forms that are more or less adaptive). One emerging construct that may be particularly useful for understanding the specific form of emotion regulation that self-harm most often takes is experiential avoidance (i.e., attempts to alter the form or frequency of unwanted internal experiences, including emotions, thoughts, memories, and bodily sensations; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Because experiential avoidance is a particular type of emotion regulation strategy with commonly associated short- and long-term consequences (including the reduction of distress and subsequent negative reinforcement of the behavior in the short-term and paradoxical, dysregulating effects in the long-term; see Hayes, Strosahl, & Wilson,

1999; Hayes et al., 1996), it may offer a useful conceptual framework for understanding the function of self-harm. In fact, examination of the functions of self-harm reported by research participants and clients suggests that this behavior does often function as a form of experiential avoidance (as it is often used to escape, avoid, or alter emotions or thoughts).

CONCLUSION

Most research on self-harm has examined the risk factors for this behavior; however, even this area has not yet been adequately researched. Although theoretical literature on the development of both self-harm and BPD suggests the role of several potentially distressing childhood experiences in the development of later self-harm, empirical attention to these factors has been limited. Empirical research has focused primarily on the role of childhood abuse and emotional neglect in the development of self-harm behavior, and findings suggest that (1) childhood sexual abuse and emotional neglect increase the risk for later self-harm, accounting for unique variance in this behavior in adulthood; and (2) childhood physical abuse is associated with self-harm in adulthood, although the extent to which it directly increases the risk for later self-harm is unclear. However, given that theoretical literature emphasizes the importance of other family-related childhood experiences and aspects of the caregiving relationship in the development of later self-harm (see Linehan, 1993), the risk associated with childhood experiences other than abuse or neglect (such as insecure attachment, childhood separation, and loss) warrants investigation.

In addition, as evidence for the role of particular childhood experiences in the development of self-harm accumulates, it will be necessary to expand on this research by examining the ways in which these (and other) risk factors interact to influence self-harm. Although studies in this area have provided some interesting and potentially important findings on the environmental risk factors for self-harm behavior, most of the variance in self-harm has not been accounted for by the models examined. Moreover, none of the risk factors for self-harm examined thus far has been specific to self-harm. More complex models of the development of self-harm are likely needed to understand more fully the etiology of this behavior, as well as to determine whether there are experiences (or combinations of experiences) that increase the risk for self-harm specifically, as opposed to psychopathology in general.

In particular, it will be necessary to begin to examine the ways in which individual risk factors interact with environmental stressors to increase the risk for later self-harm. Given Linehan's (1993) emphasis on the role of emotional vulnerability in BPD, as well as evidence that self-harm may function to regulate or express overwhelming emotions, individual difference characteristics of emotional responding may play a particularly important role in the development of self-harm. However, the role of other individual risk factors also warrants consideration. For instance, although there is limited *empirical* evidence that a propensity for dissociation is an individual risk factor for self-harm (see Low, Jones, MacLeod, Power, & Duggan, 2000), Pao (1969) suggested the presence of an underlying dissociative mechanism in patients who self-harm and others have since proposed that dissociation may mediate the relationship between childhood trauma and self-harm (see, e.g., Briere & Gil, 1998). The relationship between impulsivity and self-harm has also received some (albeit minimal) attention; however, support for impulsivity as an individual risk factor for self-harm is mixed (see Evans, Platts, & Liebenau, 1996; Herpertz et al., 1997; Simeon et al., 1992).

In addition, as much of the extant literature on self-harm originates from studies and theories that focus primarily on clinical populations of women (especially women diagnosed with BPD), future research should begin to explore the etiology of this behavior among more diverse groups of individuals. In light of evidence that self-harm occurs among nonclinical populations and to a comparable extent among women and men (see Gratz et al., 2002), research on the development and maintenance of this behavior in both clinical and nonclinical samples of women and men is needed. Moreover, given that the small amount of research examining the impact of gender on the risk factors for self-harm has suggested the presence of potentially important gender differences in the risk factors for this behavior (see Gratz et al., 2002), future research would benefit from the systematic examination of the effects of gender when developing models of the risk factors for self-harm.

It also warrants mention that the cross-sectional and correlational nature of much of the data on self-harm makes it impossible to determine with certainty the precise nature of the relationships between self-harm and its hypothesized childhood risk factors. Similarly, because most studies in this area have involved the use of retrospective,

self-report data, the possibility of retrospective bias in the reporting of childhood experiences exists. Although this is true of retrospective accounts of childhood experiences in general, it is likely to be especially true for reports of childhood neglect and insecure attachment (i.e., subjective accounts of the emotional quality of childhood relationships), as opposed to more discrete experiences of sexual and physical abuse or childhood separation. Thus, it would be useful for future studies on self-harm to begin to address these limitations by exploring the risk factors for self-harm through a longitudinal design. This design would ensure clarification of the time course of the factors of interest and enable a more thorough examination of the precise nature of these phenomena and their interrelationships.

As for the function of self-harm behavior, extant literature suggests that self-harm may often function to regulate emotions. Specifically, clinical and empirical data suggest that self-harm may operate as a form of emotional avoidance, functioning to escape, avoid, or alter unwanted emotions. In light of the limited empirical research on the functions of self-harm, however, more systematic research is needed to fully explore the varied functions of self-harm behavior, as well as the applicability and utility of emotion regulation and experiential avoidance frameworks for understanding the function of this behavior.

One must also take into consideration that the studies reviewed here have relied exclusively on retrospective self-report measures of the function of self-harm behavior—a method that has some inherent limitations. For instance, it is likely that some individuals do not have full awareness of the function of their behavior or their emotional states before and after engaging in self-harm, thereby limiting the extent to which they can accurately report on these aspects. Thus, future research would benefit from assessment of the function of self-harm in ways other than self-report, such as through the experimental assessment of physiological arousal pre- and post-in-vivo imaginal exposure to self-harm. In addition, prospective studies of the function of self-harm behavior, including self-monitoring of the emotional triggers and consequences of self-harm, may help address some of the limitations resulting from the reliance on retrospective self-reports of the function of this behavior.

As previously mentioned, research on the risk factors for, and functions of, self-harm has implications for the treatment and prevention of this behavior. This is of particular importance, given that there are few successful, empirically validated treatments for deliberate self-harm (Favazza, 1992; Winchel & Stanley, 1991; for a review of current treatments see Tantam & Whittaker, 1992; Walsh & Rosen, 1988). One exception to this is Linehan's (1993) Dialectical Behavior Therapy (DBT), which has been empirically demonstrated to be effective in reducing the number and medical risk of self-harm and suicidal behaviors among parasuicidal women with BPD (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991). One possible reason for the success of DBT in the treatment of self-harm may be that it is based on a functional consideration of self-harm behavior (see Hayes et al., 1996). Therefore, literature on the emotion regulating function of self-harm may aid in the further development of effective treatments by demonstrating the need to teach self-harming clients different emotion regulation strategies that will enable them to effectively regulate their emotions without having to rely on self-harm. In addition, research highlighting the emotionally avoidant function of self-harm suggests the potential utility of psychoeducation on the paradoxical effects of attempts to avoid internal experiences, as well as the utility of interventions aimed at helping clients learn to accept their emotions and thoughts while not necessarily acting in accordance with them (see Hayes et al., 1999).

Moreover, research on the risk factors for self-harm may also be used to inform interventions. For example, providing a context for understanding the historical factors that contributed to the development of their problem behaviors may assist clients in practicing self-acceptance and having empathy for themselves, both of which may facilitate behavior change (see Linehan, 1993). Finally, research on both the risk factors for and functions of self-harm may be used concurrently to shape preventative measures. For instance, individuals thought to be at risk for self-harm may be proactively taught ways to effectively manage their emotions. Also, if future research provides evidence for the role of emotional reactivity and intensity in self-harm behavior, preventative measures aimed at teaching adolescents at risk for this behavior affect tolerance and emotional acceptance skills could have positive long-term effects.

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