Self-Injury: A Research Review for the Practitioner

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Non-suicidal self-injury is the intentional destruction of body tissue without suicidal intent and for purposes not socially sanctioned. In this practice-friendly review, the authors summarize the empirical research on who self-injures, why people self-injure, and what treatments have demonstrated effectiveness. Self-injury is more common in adolescents and young adults as compared to adults. Common forms include cutting, severe scratching, burning, and banging or hitting; most individuals who self-injure have used more than one method. Although diagnostically heterogeneous, self-injurers typically exhibit two prominent characteristics: negative emotionality and self-derogation. Self-injury is most often performed to temporarily alleviate intense negative emotions, but may also serve to express self-directed anger or disgust, influence or seek help from others, end periods of dissociation or depersonalization, and help resist suicidal thoughts. Psychotherapies that emphasize emotion regulation, functional assessment, and problem solving appear to be most effective in treating self-injury. © 2007 Wiley Periodicals, Inc. J Clin Psychol: In Session 63: 1045–1056, 2007.

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Non-suicidal self-injury (henceforth characterized as *self-injury*) is the intentional destruction of body tissue without suicidal intent and for purposes not socially sanctioned. To those unfamiliar with self-injury the behavior appears perplexing. After all, people typically go to great lengths to avoid physical pain and injury as evidenced by staples of daily

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life such as shaving cream, helmets, and "Slippery When Wet" signs. Yet a subset of individuals engage in self-injury, and many seek treatment for the behavior or for psychological struggles that cause, maintain, or stem from the behavior.

A major obstacle to understanding and treating self-injury has been the inadequate dissemination of relevant research findings. In this article, we aim to assist practitioners by providing a comprehensive and user-friendly review of research on self-injury. The review will summarize research on (a) who self-injures, (b) why people self-injure, and (c) what treatments have demonstrated effectiveness.

Who Self-Injures?

Age of Onset

Most of what is known about self-injury comes from research on patient populations. Age of onset typically is around age 13 or 14 (e.g., Favazza & Conterio, 1989; Herpertz, 1995; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006).

Forms of Self-Injury

In treatment samples, the most common form of self-injury appears to be skin-cutting, utilized by more than 70% of those who self-injure (Briere & Gil, 1998; Langbehn & Pfohl, 1993; Nock et al., 2006). Banging, hitting, and burning are also relatively common forms of self-injury. However, in the largest study to date of a nontreatment sample, scratching was the most common form (Whitlock, Eckenrode, & Silverman, 2006). In this study, the areas of the body most likely to be injured were the arms, followed by the hands, wrists, thighs, and stomach. Importantly, most individuals who self-injure have used multiple methods (Favazza & Conterio, 1989; Gratz, 2001; Herpertz, 1995; Whitlock et al., 2006). It is also noteworthy that most who have self-injured have engaged in the behavior only once or a few times; only a minority go on to self-injure chronically (Nock et al, 2006; Whitlock et al., 2006). Most of those who go on to self-injure chronically experience frequent self-injurious urges and make many efforts to resist those urges (Klonsky & Glenn, in press-a).

Prevalence

Approximately 4% of adults in the general population report a history of self-injury, with up to 1% reporting a severe history (Briere & Gil, 1998; Klonsky, Oltmanns, & Turkheimer, 2003).

Recently, higher rates have been found in adolescents and young adults. In both the United States and Canada, 14–15% of adolescents report at least one instance of self-injury (Laye-Gindhu & Schonert-Reichl, 2005; Ross & Heath, 2002). A recent study of 9th and 10th graders found that 46% had performed at least one self-injurious behavior within the past year, including 14% who had cut or carved skin and 12% who had burned skin (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). As similar numbers have been found for college students (Gratz, 2001; Whitlock et al., 2006), it is clear that adolescents and young adults are at greatest risk for self-injury.

Not surprisingly, higher rates are apparent in individuals receiving mental health treatment: Self-injury occurs in about 20% of adult psychiatric patients (Briere & Gil, 1998) and 40–80% of adolescent psychiatric patients (Darche, 1990; DiClemente, Ponton, & Hartley, 1991; Nock & Prinstein, 2004).

Gender

The conventional wisdom is that women self-injure more than men do. However, recent large-scale studies have found similar overall rates in men and women (Briere & Gil, 1998; Klonsky et al., 2003; Whitlock et al., 2006). The main gender differences may concern methods of self-injury. Women appear more likely to cut themselves, whereas men appear more likely to burn or hit themselves (Claes, Vandereycken, & Vertommen, 2006; Laye-Gindhu & Schonert-Reichl, 2005).

Ethnicity

Striking patterns have become apparent regarding ethnicity. Rates of self-injury are higher in Caucasians than non-Caucasians, a trend that has been reported across psychiatric, forensic, and nonclinical populations (Gratz, 2006; Guertin, Lloyd-Richardson, & Spirito, 2001; Jones, 1986; Maden, Chamberlain, & Gunn, 2000). Other studies have not replicated this link between ethnicity and self-injury (Whitlock et al., 2006), although no study to date has found lower rates in Caucasians than non-Caucasians.

Psychological Characteristics

Individuals who self-injure are more likely to exhibit certain psychological characteristics. The most prominent of these features is perhaps negative emotionality.

Negative emotionality. Self-injurers experience more frequent and intense negative emotions in their daily lives than individuals who do not self-injure. Self-injurers have been found to score highly on measures of negative temperament, emotion dysregulation, depression, and anxiety (e.g., Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Gratz & Roemer, 2004; Klonsky et al., 2003). The heightened experience of negative emotions may be the primary reason for self-injury, as self-injury may temporarily alleviate emotional distress (Klonsky, 2007; see below for a more detailed review of the functions of self-injury).

Deficits in emotion skills. In addition to the increased presence of negative emotions, self-injurers also display difficulties with their experience, awareness, and expression of emotions. For example, two studies found that self-injurers are more likely to experience periods of dissociation during which the experience of emotion is impaired (Gratz et al., 2002; Zlotnick et al., 1996). People often describe feeling nothing or unreal during dissociative episodes. In addition, self-injurers tend to be alexithymic (have difficulty in identifying or understanding their emotions) and be less mindful, or aware, of their emotions compared to non-self-injurers (Lundh, Karim, & Quilisch, 2007; Zlotnick et al., 1996). Finally, self-injurers are more likely to have trouble expressing their emotions relative to non-self-injurers (Gratz, 2006).

Self-derogation. In addition to problems with emotion, self-injurers appear particularly prone to be self-critical or experience intense self-directed anger or dislike. Self-punishment and self-directed anger are frequently cited as motivations for self-injury (Klonsky, 2007). Self-injury has been linked repeatedly to self-derogation (Herpertz et al., 1997; Klonsky et al., 2003; Soloff et al., 1994) and more recently to low self-esteem (Lundh et al., 2007). In our opinion, individuals high in both negative emotionality and

self-derogation are at particular risk for self-injury, although research has not yet explicitly addressed the combination of these characteristics in relation to self-injury.

Psychiatric Diagnosis

Although mental diagnoses are not infrequent in individuals who self-injure, the presence of self-injury does not imply the presence of any particular diagnosis. Ample research suggests that individuals who self-injure are diagnostically heterogeneous and may experience a range of psychological disorders (Klonsky et al., 2003; Nock et al., 2006).

However, in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision* (*DSM-IV-TR*; American Psychiatric Association, 2000), self-injury appears only once, as a symptom of borderline personality disorder (BPD). Indeed, there is robust evidence that individuals who self-injure exhibit more symptoms of BPD than individuals who do not self-injure (Andover et al., 2005; Klonsky et al., 2003). The link between BPD and self-injury is not surprising because both have negative emotionality and emotion dysregulation as core features.

Other diagnoses also indicate an increased likelihood of self-injury. For example, symptoms of both depressive and anxiety disorders are associated with self-injury (Andover et al., 2005; Klonsky et al., 2003; Ross & Heath, 2002), perhaps because they, like BPD, are characterized by negative emotionality and emotion dysregulation (Gross & Munoz, 1995; Mennin et al., 2005). In contrast to conventional wisdom, anxiety may be more strongly related to self-injury than depression (Klonsky et al., 2003). One speculation is that anxiety is more closely related to the emotional arousal or pressure that often prompts self-injury (Klonsky & Glenn, in press-b).

There is also reason to believe that self-injury often co-occurs with eating disorders such as bulimia and anorexia. Disordered eating behaviors such as binging and purging may be prompted by negative emotions comparable to those that tend to precede self-injury (Jeppson, Richards, Hardman, & Granley, 2003; Mizes & Arbitell, 1991). A recent large-scale study of college students found a correlation between eating disorder symptoms and self-injury (Whitlock et al., 2006). At the same time, not all studies confirm this link, and the majority of self-injurers probably do not have eating disorders (Zlotnick et al., 1999).

Finally, individuals suffering from substance disorders are more likely to self-injure. Self-injury and substance abuse both involve causing harm to the body physiologically, and therefore similar psychological processes may underlie the behaviors. Joiner (2005) theorizes that substance use helps individuals habituate to self-inflicted violence. Although there is no direct evidence for this conceptual explanation, there is evidence that individuals with substance disorders self-injure more than non-substance-users (Langbehn & Pfohl, 1993).

Childhood Abuse

Some mental health professionals take for granted that self-injurers have experienced child abuse, especially child sexual abuse, and that abuse leads to the development of self-injury. For example, Noll and colleagues (2003, p. 1467) propose that sexually abused individuals who self-injure "may be reenacting the abuse perpetrated on them," and Cavanaugh (2002, p. 97) describes self-injury as a "manifestation of sexual abuse."

But the research suggests a more modest relationship. A recent review aggregated results from 43 studies and found that the relationship between child sexual abuse and

self-injury was modest (mean weighted aggregate phi = .23; Klonsky & Moyer, 2007). This review also concluded that child sexual abuse could be conceptualized as a proxy risk factor (see Kraemer et al., 2001) for self-injury. In other words, child sexual abuse and self-injury may be associated because they are correlated with the same psychological risk factors. In sum, although child abuse may play an important role for some people's self-injury, many who have been abused do not go on to self-injure, and many who self-injure have not been abused.

Suicide

The link between suicidal and non-suicidal self-injurious behaviors is nuanced. It is well established that suicidal behaviors are different from self-injury in their phenomenology, characteristics, and intent, although they share some psychosocial risk factors (Muehlenkamp, 2005; Walsh, 2006). Individuals who self-injure are not necessarily at risk for suicide because there are many who never attempt suicide or have suicidal thoughts. However, a sizable portion (50% community; 70% inpatients) of self-injurers do report having attempted suicide at least once (e.g., Muehlenkamp & Gutierrez, 2007; Nock et al., 2006). Preliminary research has identified self-injurers who report being repulsed by life, having greater amounts of apathy, self-criticality, fewer connections to family members, and less fear about suicide as more likely to attempt suicide (Muehlenkamp & Gutierrez, 2004, 2007). Therefore, it is essential to routinely assess the intent or motivation underlying the self-injury as well as pay careful attention to the psychiatric symptoms being reported throughout treatment.

Why Do People Self-Injure?

Clinicians have long speculated about why people self-injure. Until recently, the seminal writings on the functions of self-injury were only theoretical (Suyemoto, 1998) because sufficient research was lacking. Fortunately, the functions of self-injury have received increased attention in recent years, and a comprehensive review of this research is now available (Klonsky, 2007).[1] Below we provide descriptions of and evidence for various functions of self-injury. It is important to note that different functions are not mutually exclusive; they can and often do co-occur in individuals who self-injure.

Affect Regulation

Affect regulation appears to be the most prevalent function of self-injury. Self-injury is most often a strategy to alleviate intense, overwhelming negative emotions. Emotions such as anger, anxiety, and frustration tend to be present before self-injury, and self-injury is often followed by feelings of relief or calm. Common reasons given for self-injury include "to release emotional pressure that builds up inside of me," "to stop bad feelings," or "to manage stress." Although there are some biological and psychological explanations of how self-injuring helps alleviate negative emotions, the mechanisms are not fully understood.

[1]In the interest of space and efficiency, we do not individually cite or describe the numerous studies on which the review was based. Table 2 in Klonsky (2007, p. 231) lists these important studies and we encourage interested readers to obtain these articles.

Self-Punishment

Many self-injurers identify motivations related to self-punishment or self-directed anger. This pattern is consistent with research finding self-derogation and low self-esteem in those who self-injure (Klonsky et al., 2003; Lundh et al., 2007). For these individuals, self-injury may be experienced as familiar, ego-syntonic, or self-soothing in the face of distress. Reasons often cited for self-injury include "to express anger at myself" and "to punish myself." Next to affect regulation, self-punishment was the most prevalent reason for self-injury in the reviewed studies (Klonsky, 2007).

Interpersonal Influence

Although less pervasive than affect-regulation or self-punishment, the desire to influence others appears to motivate self-injury in many cases. For example, an individual might self-injure to elicit affection from a significant other or loved one or to elicit reinforcing responses from authority figures or peers in correctional, clinical, or school settings. In some cases, self-injury may provide a way to bond with friends who self-injure. A minority of self-injurers endorse reasons for self-injury such as, "to seek caring and support from others," "to control the behavior of others," "to get help from others," and "to bond with friends." Some people may not be fully aware that their self-injury is encouraged or reinforced by its effects on others.

Antidissociation

Some who self-injure state that they sometimes feel unreal or feel nothing at all. These experiences can be frightening, and some may use self-injury to interrupt these dissociative episodes. The physical injury or sight of blood may jolt the system and help self-injurers regain a sense of self. For this reason, *feeling generation* is another term that can be used to refer to the antidissociation function of self-injury. Reasons sometimes identified for self-injury include, "to feel something even if it is pain," "to feel real again," or "to stop feeling numb." It is possible that the antidissociation and affect-regulation functions of self-injury overlap because episodes of dissociation or depersonalization may occur as a result of the intense emotions that self-injurers feel.

Antisuicide

Some characterize self-injury as a means of resisting urges to attempt suicide. Reasons reported by self-injurers that are suggestive of this function include "to prevent me from acting on suicidal feelings" and "to stop suicidal ideation or attempts." This function, too, may be related to affect-regulation in that self-injury may alleviate intense negative emotions that lead one to feel suicidal.

Sensation Seeking

Some may use self-injury as a means for generating excitement or exhilaration in a manner similar to skydiving or bungee jumping. For example, reasons given by some self-injurers include "to experience a high," "I thought it would be fun," and "for excitement." When performed for this reason, self-injury may occur around friends or peers. In

contrast, self-injury performed for affect-regulation, self-punishment, antidissociation, or antisuicide reasons is more likely to be performed in private and kept secret.

Interpersonal Boundaries

Finally, for some individuals, self-injury is used to affirm the boundaries of the self. Marking the skin, which separates individuals from the environment and other people, may help one feel more independent, autonomous, or distinct from others. Some describe self-injury as something "I have control of and no one else can control."

Implications of Different Functions

Because self-injury typically serves multiple psychological functions, identifying functions relevant to a particular client can inform treatment. For example, therapies focused on emotion regulation skills may be most appropriate when self-injury is primarily performed to cope with negative emotions. When interpersonal-influence functions are more prominent, therapy may focus on fostering interpersonal-effectiveness skills and alternative ways of reacting to the interpersonal situations prompting self-injury.

Assessing functions can also inform treatment in other ways. A recent study suggested that a particular measure of self-injury functions was useful for identifying self-injurers at greatest risk for psychological disorders and suicidal behavior (Glenn & Klonsky, 2007). Another study found that self-injurers endorsing affect-regulation functions (e.g., to stop bad feelings, to feel relaxed) were more likely to have made a recent suicide attempt and feel hopeless (Nock & Prinstein, 2005). However, research on the implications of functions for treatment is only just beginning.

What Treatments Have Demonstrated Effectiveness?

Many psychotherapies used to treat self-injury were initially developed to treat specific mental disorders and other comorbid conditions associated with self-injury (e.g., borderline personality disorder, depression). Consequently, there are a number of treatments that appear to be effective in remedying self-injury, leaving room for clinicians to adopt a flexible, multimodal approach. The challenge is that the treatments can differ from each other, leaving the clinician responsible for figuring out which aspect(s) of the respective therapies may be effective for the self-injury. Below, we identify the therapies with empirical support and point to the possible effective change mechanisms to assist clinicians in designing their therapeutic approach. (Other articles in this issue provide detailed information about treatments for self-injury.)

Cognitive–Behavioral Therapies

Cognitive–behavioral therapies have received the most research attention as evidence-based treatment for reducing self-injury (see Muehlenkamp, 2006). Specific therapies falling under this domain include problem-solving therapy, dialectical behavior therapy, and standard cognitive–behavioral treatment. Although each of these treatments have unique components that may be *the* effective ingredient, they share common therapeutic techniques such as using functional assessments of self-injury to inform treatment, teaching specific skills (e.g., problem-solving, distress tolerance, assertive communication), using behavioral interventions (e.g., exposure, activity scheduling, removing reinforcers),

and implementing cognitive restructuring. Because these elements appear to be shared across each therapy, it is possible they represent the core mechanisms of change that should be incorporated into any treatment of self-injury.

Although we do not know what the specific mechanisms of change are, research seems to support the effectiveness of cognitive–behavioral therapies for reducing self-injury. Early studies of problem-solving therapies reported significant improvements in acts of self-poisoning. Recent meta-analyses of this treatment have identified that it is effective in reducing self-injurious behaviors as well (Townsend et al., 2001). In addition to problem-solving therapy, standard cognitive–behavioral approaches have also shown effectiveness in reducing self-injury as well as improving associated psychiatric symptoms (Crowe & Bunclark, 2000). Studies of manual-assisted cognitive–behavioral therapy (MACT; Evans et al., 1999), which incorporates problem-solving and cognitive–behavioral methods, have also shown success. A series of studies has provided evidence that MACT results in significant reductions of self-injury as well as longer time delays for repeat self-injurious acts that are maintained over 12 months posttreatment (Tyrer et al., 2003).

Dialectical behavior therapy (DBT; Linehan, 1993) is another treatment that has received wide recognition for its effectiveness in reducing parasuicidal behavior, which can include self-injury. Although most of the studies reporting on the efficacy of DBT focus on individuals with borderline personality disorder and the reduction of suicidal behavior, some have noted that DBT also helps to reduce the incidence of self-injury (Turner, 2000). However, research has also failed to find differences in the reduction of self-injury between DBT and other treatments (Linehan et al., 2006). The different findings regarding DBT's effectiveness in reducing self-injury should not be discouraging because DBT did lead to significant improvements for self-injury. What the research suggests is that DBT is not necessarily *more* effective in reducing self-injury than other treatment, although it was more effective in reducing suicidal behaviors. What the research suggests is that cognitive–behavioral therapies results in significant improvements for self-injury, but additional research is needed to identify what the effective ingredients across therapies are that result in the reductions of this behavior.

Psychodynamic Therapies

Psychodynamic treatments have also begun to show empirical evidence of effectiveness in reducing self-injury (Bateman & Fonagy, 2001; Monsen, Odland, Faugli, Daae, & Eilertsen, 1995; Ryle, 2004). Many of the dynamic treatments reported in the literature were designed to treat borderline personality disorder; nevertheless, self-injury is often present and a treatment target. Across the psychodynamic treatments reported in the literature, the common therapeutic elements appear to be processing past relationships and building new, positive interpersonal relationships; increasing awareness and expression of affect; and focusing upon the development of a client's self-image. However, no studies to date that have attempted to identify the core mechanisms of therapeutic change within dynamic treatments of self-injury.

Consistent with the targets of treatment described above, research on dynamic therapy has consistently reported significant improvements in intimate relationships, psychiatric symptoms, general distress, suicidal/self-injurious behaviors, and decreases in mental health service utilization among outpatients (Korner, Gerull, Mears, & Stevenson, 2006). These improvements were maintained at 1- to 5-year follow-up assessments and replicated in new samples. Monsen and colleagues (1995) reported that their object-relations

based treatment resulted in significant positive changes across multiple psychosocial domains typically associated with self-injury, although they did not specifically report on self-injury. Similar results were obtained by Bateman and Fonagy (2001), who reported that significant reductions in suicide attempts and self-injury were maintained 18 months posttreatment, along with improvements in depressive and anxious symptoms, interpersonal relationships, and general distress levels.

Cognitive–analytic therapy (Ryle, 2004), which blends dynamic and cognitive therapies, has also documented success in reducing self-injury while improving general psychosocial functioning among individuals with borderline personality disorder (Martens, 2006). Lastly, supportive psychotherapies that emphasize building upon personal strengths and enhancing self-esteem have demonstrated preliminary support for reducing self-injurious behaviors and borderline symptoms (Aviram, Hellerstein, Gerson, & Stanley, 2004).

Pharmacotherapy

To date, there have been no known studies that evaluate the effectiveness of different medications in reducing self-injury. However, there is research documenting the usefulness of pharmacotherapy for reducing many of the symptoms of mental disorders that co-occur with self-injury, such as depression and anxiety (e.g., Bridge et al., 2007) and borderline personality disorder (e.g., Nose, Cipriani, & Biancosino, 2006).

Summary

Self-injury is a complex behavior that is heterogeneous in its presentation, features, and functions. As a result, many clinicians are perplexed and uncertain about the best way to proceed in treating the behavior. Based upon our research review, we conclude that one promising way to approach psychotherapy with a self-injurer is to understand the behavior from the client's perspective. Conducting a careful analysis of the functions served, the psychiatric symptoms underlying the self-injury, and interpersonal dynamics can provide an insightful guide for treatment. Once specific pathogenic characteristics of the self-injury are identified for the client, clinicians can draw upon the evidence-based relationships and treatments outlined above. The key to effectively treating self-injury will lie in the clinician's ability to form an empathic, nonjudgmental relationship with the client and to be flexible in adapting empirically supported treatments into an individualized, multimodal approach.

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