



# The Role of Trauma Symptoms in Nonsuicidal Self-Injury

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## Abstract

Reports of traumatic events by individuals who engage in nonsuicidal self-injury (NSSI) are common; yet, evidence for the relation between traumatic events and NSSI is inconclusive. This review explores the thesis that trauma symptoms, rather than the experience of a traumatic event per se, underlie this relation, specifically suggesting that trauma symptoms might serve as a mediator. The literature indicates that self-injury plays an important functional role in coping with trauma symptoms such that self-injury can provide an escape from intrusive thoughts and aversive emotional states, as well as end dissociation and periods of numbness through the generation of feelings. Additionally, trauma symptoms have been shown to mediate the relation between the occurrence of traumatic events and NSSI. Taken together, trauma symptoms may play an important role in the development and maintenance of NSSI. The review concludes with treatment implications and future directions for research.

## Keywords

child abuse, sexual assault, self abuse/mutilation, violence exposure

## Key Points of Research Review

- The present review focuses on recent developments in understanding the relation between trauma symptoms and self-injury. It extends previous work by examining the link between self-injury and trauma symptoms, rather than traumatic experiences. The review suggests that trauma symptoms serve a mediating role in the relation between traumatic experiences and self-injury.
- Evidence for the relation between self-injury and traumatic experiences is mixed and inconclusive, such that some studies find a significant relation between self-injury and trauma, whereas others have failed to find a relation. Psychiatric risk factors, such as trauma symptoms, could be important components that explain these inconsistent findings.
- Self-injury serves a number of important functions in coping with trauma symptoms, such as escaping intrusive thoughts or memories, or generating feeling during periods of dissociation and numbing.
- As partial and full mediators, cross-sectional studies provide preliminary support that trauma symptoms may be a mechanism in the relation between traumatic experiences and self-injury.
- Given the important mechanistic role of trauma symptoms in self-injury, combined with the functional role of self-injury in coping with trauma symptoms, the association warrants further attention. Self-injury appears to be an effective, yet maladaptive strategy, to cope with trauma symptoms and is likely maintained through the reinforcing properties of self-injury.

Nonsuicidal self-injury (NSSI; hereafter, self-injury) is defined as the deliberate and direct destruction of oneself without suicidal intent, outside of cultural and religious norms and pervasive developmental disorders (Nock & Favazza, 2009). There has been a long-standing interest in the relation between traumatic experiences and self-injury; yet, the role of trauma symptoms particularly outside of a clinical diagnosis has garnered little attention. In an earlier review by Connors (1996a), self-injury was described as a means to cope with the psychological effects following traumatic experiences. In a meta-analysis examining the relation between child sexual abuse and self-injury, the findings indicated that the association was small (mean weighted aggregate  $\phi = 0.23$ ; Klonsky & Moyer, 2008). When psychiatric risk factors were added as covariates, the relation between abuse and self-injury was negligible, such that abuse explained little, if any, unique variance. These findings indicate that there are likely other factors than the traumatic event contributing to self-injury.

The purpose of this review is to examine the role of trauma symptomatology in self-injury, specifically proposing it as a mediator in the relation between traumatic experiences and self-injury. The review will consist of three parts: (1) a summary of Connors' (1996a, 1996b) review, (2) a brief overview

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of the research since Connors' review that extends beyond the scope of childhood trauma and examines a broader range of trauma, specifically interpersonal trauma, and (3) a synthesis of the research on the link between trauma symptoms and self-injury, which offers preliminary support for conceptualizing trauma symptoms as a mechanism underlying self-injury. The review will conclude by offering clinical and research implications as well as future directions.

### Review Strategy

For this review, the literature was searched by accessing the following databases: PsycInfo, MEDLINE/PubMed, and GoogleScholar, as well as reference lists of relevant articles. Search terms were formulated to identify articles that addressed both self-injury and trauma symptoms (e.g., nonsuicidal, self-injur\*, self-harm\*, self-mutilat\* AND trauma symp\*, hyperarousal, avoidance, reexperiencing, PTSD, trauma, abuse, etc.). Few restrictions, such as age range or gender, were placed on included studies. Inclusion criteria consisted of studies written in the English language, published in peer-reviewed journals, published after Connors' review (1996a, 1996b), and those that specifically examined NSSI. Studies examining deliberate self-harm that included suicide attempts, self-poisoning, and indirect forms of self-harm were not included. This was done because there seems to be a distinction in psychological correlates between these indirect (e.g., substance abuse, eating disorder behaviors, etc.) and direct forms of self-injury (e.g., self-cutting and other forms of harm causing direct bodily damage; St. Germain & Hooley, 2012). Studies published through July 2012 were reviewed.

### What Is Self-Injury?

Self-injury is fairly prevalent in the general adult population (4–5.9%; Briere & Gil, 1998; Klonsky, 2011). It is particularly common in adolescent (up to 46%; Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007), college (7–38%; Gratz, Conrad, & Roemer, 2002; Wilcox et al., 2012), and clinical populations (Zanarini, Frankenburg, Hennen, & Silk, 2003). The mean age of onset is 13–16 (Klonsky, 2011; Nock, 2009). Self-injury appears to be more common in females (Sornberger, Heath, Toste, & McLouth, 2012; Whitlock et al., 2011). Common examples include cutting, scratching, and banging (e.g., Briere & Gil, 1998; Klonsky, 2011; Muehlenkamp & Gutierrez, 2007; Whitlock, Eckenrode, & Silverman, 2006), and more than half of self-injurers endorse multiple methods (50–70%; Klonsky, 2011; Whitlock et al., 2006).

Self-injury can occur in the context of many psychological disorders (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006), with many self-injurers meeting diagnostic criteria for a number of *Diagnostic and Statistical Manual of Mental Disorders—Fourth edition (DSM-IV*; American Psychiatric Association, 2000) Axis I and/or Axis II disorders. For example, Nock, Joiner, Gordon, Lloyd-Richardson, and Prinstein (2006) found that 87.6% of adolescent self-injurers in

an inpatient setting met diagnostic criteria for at least one Axis I disorder, which includes major mental disorders such as mood and anxiety disorders. Roughly two thirds met for at least one Axis II disorder (Nock et al., 2006), which refers to underlying pervasive conditions such as personality disorders. Self-injury is associated with negative psychological and physical consequences. Compared to noninjurers, self-injurers experienced more frequent and intense negative emotions, such as anxiety, depression, aggression, and mood swings (Brown, Williams, & Collins, 2007; Di Pierro, Sarno, Perego, Gallucci, & Madeddu, 2012; Fliege, Lee, Grimm, & Klapp, 2009; Selby, Bender, Gordon, Nock, & Joiner, 2012). Perhaps most alarming is the association between self-injury and suicidal tendencies, such that almost three quarters of adolescent self-injurers reported a suicide attempt (70%; Nock et al., 2006), and self-injury was prospectively related to suicidal ideation and attempts (Guan, Fox, & Prinstein, 2012).

### Summary of Connors' Review

Connors (1996a, 1996b) reviewed the connection between self-injury, childhood trauma, and its aftermath and elaborated on a number of functions and meanings of self-injury following trauma. Specifically, she described self-injury as a “fundamentally adaptive and life-preserving coping mechanism” (Connors, 1996a, p. 199) following adverse childhood experiences such as abuse, neglect, loss, and abandonment. Accordingly, self-injury “enables people struggling with overwhelming and often undifferentiated affect, intense psychological arousal, intrusive memories, and dissociative states to regulate their experiences and stay alive” (p. 199). Connors' seminal review provided a compelling conceptualization of self-injury as a coping mechanism following childhood trauma. Yet, her theories largely relied on clinical observations rather than empirical studies given the neophyte status of the field at the time. Additionally, her observations were drawn from children's reactions to trauma and the coping function it served, limiting the generalizability to adult populations.

Connors (1996a) proposed four primary functions for self-injury in childhood trauma survivors. The first function of self-injury was conceptualized as a reenactment of original trauma, such as unconsciously acting out the event in their bodies, attempting to communicate about the trauma, or sorting out reality. The second function is the expression of feelings and needs, such as rage, frustration, guilt, and shame; these self-directed feelings are combined with an element of self-punishment. Third, self-injury serves as a means to organize the self, regain homeostasis, and physiological and emotional equilibrium and to provide a sense of control. The fourth function is the management and maintenance of dissociative processes, such that it regulates the degree of sensation, as well as provides reassurance about being alive (Connors, 1996a). Accordingly, Connors' review provides a foundation for viewing trauma symptoms as a mechanism underlying self-injury.

## Research on Traumatic Experiences and Self-Injury Since Connors' Review

Notably, studies have provided empirical support for many of Connors' arguments in that there is evidence for a relation between traumatic experiences and self-injury. A link between self-injury and child maltreatment, most specifically for sexual abuse, has been reported (for reviews, see Lang & Sharma-Patel, 2011; Maniglio, 2011). Traumatic experiences are also related to the frequency of self-injury, such that more frequent self-injury was associated with more episodes of physical and sexual abuse (Di Pierro et al., 2012). Although Connors focused on childhood trauma, research supports the connection that other traumatic experiences are also linked to self-injury. Intimate partner violence was associated with self-injury in a sample of young adults (Levesque, Lafontaine, Bureau, Cloutier, & Dandurand, 2010), as were interpersonal trauma and sexual discrimination in a sample of individuals self-identifying as gay, lesbian, bisexual, and/or transgender (House, Van Horn, Coppeans, & Stepleman, 2011). Witnessing a trauma was also associated with self-injury in college students (Cheng, Mallinckrodt, Soet, & Sevig, 2010; Wiederman, Sansone, & Sansone, 1999). Taken together, self-injury may manifest itself as a part of posttraumatic response in individuals who experienced or witnessed traumatic events (Cheng et al., 2010).

However, despite multiple studies indicating a relation between self-injury and trauma (e.g., Cheng et al., 2010; Di Pierro et al., 2012; House et al., 2011; Levesque et al., 2010), the findings are equivocal. For instance, in a sample of college students, self-injurers did not differ from noninjurers on childhood trauma and abuse (Heath, Toste, Nedecheva, & Charlebois, 2008). Likewise, in adolescent inpatients, childhood sexual abuse and/or physical abuse were not related to self-injury (Weismoore & Esposito-Smythers, 2010). In a sample of young adults, childhood sexual abuse only indirectly predicted nonsuicidal self-harm (which included overdosing in the definition); whereas anxiety disorders were directly related to later self-harm (Nada-Raja & Skegg, 2011).

## Trauma Symptoms as a Mechanism Underlying Self-Injury

The previous parts of this review have shown that traumatic experiences are related to self-injury, although this relation seems to be inconsistent. As noted in the meta-analysis by Klonsky and Moyer (2008), it may not be the traumatic event in and of itself specifically driving the relation between trauma and self-injury, but rather the accompanying psychiatric symptoms (e.g., depression, anxiety, and self-derogation). Trauma symptoms may be one component of these psychiatric symptoms. In the following sections of this review, we examine whether trauma symptoms are an underlying mechanism in the relation between traumatic experiences. We begin with a discussion of trauma symptoms, the relation between these symptoms and self-injury, and discuss the function self-injury plays in coping with trauma symptoms.

## Overview of Trauma Symptoms

Traumatic experiences are distinct from trauma symptoms; traumatic experiences are not, in and of themselves, features of psychopathology. Traumatic experiences are prevalent in the general population with more than 80% of individuals experiencing a traumatic event at some point during their lives (Sledjeski, Speisman, & Dierker, 2008). However, only a portion of these individuals go on to experience prolonged or clinically significant trauma symptoms. For example, about 94% of rape victims experienced trauma symptoms within the first few weeks of the event, and slightly less than half of the victims displayed symptoms 3 months after the event (Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992).

According to the *DSM-IV* criteria (American Psychiatric Association, 2000), the core components of posttraumatic stress disorder (PTSD) include a traumatic experience, a response that involved intense fear, helplessness, or horror, and clinically significant distress or impairment in one or more areas of functioning. PTSD has three symptom clusters that comprise the various trauma symptoms. In order to meet diagnostic criteria for PTSD, a minimum number of symptoms must be endorsed in each cluster persisting for at least 1 month and at least 3 months for chronic PTSD.

Symptoms of Cluster A include recurrent intrusive distressing recollections, recurrent distressing dreams, acting or feeling as if the event were recurring, intense psychological distress, and/or physiological reactivity at exposure to cues (American Psychiatric Association, 2000). Cluster B is associated with avoidance and numbing symptoms. These symptoms include physical and experiential avoidance such as avoidance of thoughts, feelings, and conversations associated with the trauma. Cluster B symptoms also include marked diminished interest in participation in activities, feeling detached or estrangement from others, restricted range of affect, a sense of foreshortened future, and efforts to avoid activities, places, or people that arouse recollections of the trauma. This cluster can include avoidance symptoms such as dissociation as well as alexithymia, the inability to identify and express emotions (Bandura, 2003). Dissociation is a trauma-related symptom that aligns with the avoidance and numbing symptoms of Cluster B, such as the inability to remember some important part of the trauma. Although dissociation also occurs in the context of many other psychiatric disorders (e.g., dissociative disorders), it plays an important role in the relation between abuse and self-harm (Hall, 2003) and will be included as a trauma-related symptom for purposes of this review.

The third cluster, Cluster C, is characterized by the symptoms of hyperarousal, such as difficulty falling/staying asleep, irritability/outbursts of anger, difficulty concentrating, hypervigilance, and an exaggerated startle response. When the minimum number of criteria is not met for a diagnosis, this is often referred to as *sub-threshold PTSD*. Although not a formal diagnosis, it is associated with significant impairment in social and work domains, and the desire for treatment for their symptoms (Zlotnick, Franklin, & Zimmerman, 2002). As such, it is important to consider trauma symptoms, without being limited by a diagnosis.

Although not part of the trauma symptoms according to the *DSM-IV*, there are other commonly reported trauma-related symptoms such as anger, disgust, guilt, shame, and sadness (e.g., Andrews, Brewin, Rose, & Kirk, 2000; Feeny, Zoellner, & Foa, 2000; Power & Fyvie, 2012). Self-blame and negative cognitions about oneself also appear to be particularly salient posttraumatic responses (e.g., Larsen & Fitzgerald, 2011; Whiffen & MacIntosh, 2005). In the relation between childhood sexual abuse and emotional distress, shame/self-blame and difficulties in interpersonal relationships may play an important role explaining responses in the aftermath of traumatic experiences (for a review, see Whiffen & MacIntosh, 2005).

### *The Relation Between Trauma Symptoms and Self-Injury*

The extant literature indicates that trauma symptoms according to the *DSM-IV* criteria for PTSD, as well as trauma-related symptoms (e.g., anger, disgust, guilt, shame, etc.), are related to self-injury. For example, PTSD symptoms were more influential than childhood sexual abuse in predicting self-injury (Weierich & Nock, 2008). Specifically, after controlling for PTSD symptoms, the relation between childhood sexual abuse and self-injury was no longer significant. In another study, trauma symptoms were associated with a greater increase in the odds of reporting self-injury compared to the traumatic event; trauma symptoms were associated with a 5.5-fold increase in the odds of reporting self-injury, whereas sexual abuse was associated with a 2-fold increase in self-injury (Bornovalova, Tull, Gratz, Levy, & Lejuez, 2011). These findings indicate that in addition to traumatic events, trauma symptoms may play an influential role in understanding self-injury.

Dissociation appears to be particularly related to self-injury, in that self-injurers endorsed elevated levels of dissociation among individuals with eating disorders (Paul, Schroeter, Dahme, & Nutzinger, 2002) and substance abuse (Zlotnick et al., 1997). Dissociation (a Cluster B symptom) was associated with increased frequency of self-injury in females (Low, Jones, MacLeod, Power, & Duggan, 2000; McReynolds & Wasserman, 2011; Rodriguez-Srednicki, 2001) and psychiatric patients (Zlotnick, Mattia, & Zimmerman, 1999). Reversal or control over dissociative states has been reported as an important motive for self-injury in females with borderline personality disorder (BPD; Kleindienst et al., 2008). Additionally, the relation between abuse and self-injury was no longer significant after controlling for dissociation and alexithymia (Zlotnick et al., 1996).

Self-injury is associated with trauma-related symptoms such as anger and disgust (Klonsky & Muehlenkamp, 2003; Whitlock et al., 2011) and greater levels of hostility, guilt, and sadness (Brown et al., 2007). Additionally, negative self-views were associated with elevated rates of self-injury among abuse victims (Weismore & Esposito-Smythers, 2010). A negative cognitive style prospectively predicted self-injury in a sample of adolescents (Hankin & Abela, 2011). Taken together, trauma and trauma-related symptoms appear to have a striking connection to self-injury.

*Self-Injury, Trauma Symptoms, and PTSD.* Research suggests a relation between trauma symptoms and self-injury in individuals with a diagnosis of PTSD. Rates of PTSD are higher in self-harming individuals (24%; Nock et al., 2006) compared to the general population (6.8%; Kessler et al., 2005). Similarly, a PTSD diagnosis was associated with higher rates of self-injury and worse psychosocial functioning (Mueser & Taub, 2008). Over half of the male veterans with PTSD had engaged in some form of self-harm (Sacks, Flood, Dennis, Hertzberg, & Beckham, 2008). Specifically, in Sacks, Flood, Dennis, Hertzberg, and Beckham's (2008) study, self-injuring veterans reported higher levels of PTSD (e.g., higher levels of trauma symptoms), as well as depression, hostility, and impulsivity compared to noninjurers.

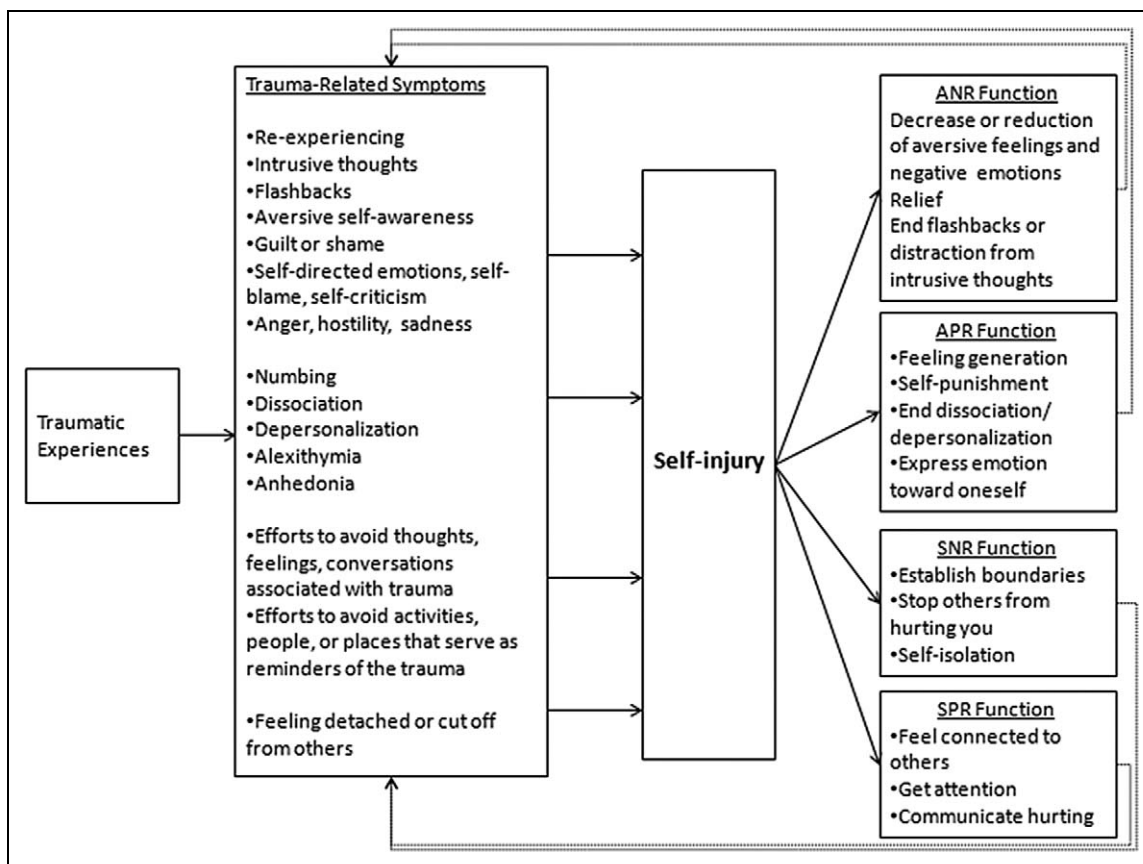
*Self-Injury, Trauma Symptoms, and Comorbid PTSD and BPD.* In adults with BPD, up to 80% endorse self-injury (Zanarini et al., 2003) and the prevalence of PTSD ranges from 30 to 61% (Pagura et al., 2010; Zanarini, Hörz, et al., 2011). Risk factors for self-harm in individuals with BPD include trauma-related symptoms (e.g., dissociative symptoms and depression; Zanarini, Laudate, Frankenburg, Reich, & Fitzmaurice, 2011). Traumatic experiences that occur during childhood as well as those that occur in adulthood (e.g., history of childhood sexual abuse, sexual assault as an adult) independently and prospectively predicted self-injury in a sample of 290 females diagnosed with BPD. Additionally, comorbid PTSD and BPD was related to more self-injurious behaviors (Rüsch et al., 2007), suggesting the importance of trauma symptoms beyond BPD pathology.

Further evidence for the specific role of trauma symptoms in self-injury comes from a study by Harned, Rizvi, and Linehan (2010) comparing individuals with comorbid PTSD and BPD to BPD only in a sample of female outpatients with recent and repeated suicidal or self-injurious behaviors. Individuals with comorbid BPD and PTSD reported significantly greater frequency of self-injury and trauma-related triggers of self-injury, including flashbacks/nightmares, thoughts about sexual abuse/rape, and talking to someone about sexual abuse/rape. Harned et al. found significant differences in trauma history such that individuals with comorbid BPD and PTSD endorsed significantly more lifetime traumatic events (on average 36) compared to BPD participants without PTSD (on average 26; Harned, Rizvi, & Linehan, 2010). Notably, with such high numbers of overall reported traumatic events in both groups, the presence of trauma symptoms in the PTSD-absent group is highly likely. Due to the examination of traumatic experiences and trauma-related triggers of self-injury in a sample of individuals with BPD, the results may not be generalizable to self-injurers in the absence of an Axis II diagnosis such as BPD.

### *Self-Injury as a Coping Mechanism for Trauma Symptoms*

Based on evidence from the aforementioned studies, it appears that trauma symptoms do indeed play a role in self-injury; it is





**Figure 1.** Theoretical model of the relation between traumatic experiences, trauma symptoms, and self-injury. Note. ANR = automatic negative reinforcement; APR = automatic positive reinforcement; SNR = social negative reinforcement; SPR = social positive reinforcement.

likely that self-injury plays a functional role such that it serves as a way to cope with trauma-related symptoms (e.g., Briere & Gil, 1998; Nock & Prinstein, 2005; Zanarini, Ruser, Frankenburg, & Hennen, 2000). As with Connors' model, functional perspectives of self-injury have been proposed (e.g., Chapman, Gratz, & Brown, 2006; Gratz, 2003; Klonsky, 2007; Nock & Prinstein, 2004). Specifically, Nock and Prinstein (2004) conceptualized a four-factor model that provides a functional perspective of self-injury such that the various functions differ in the antecedents and sequelae of self-injury. Each of these four functions (e.g., automatic negative reinforcement [ANR], automatic positive reinforcement [APR], social negative reinforcement [SNR], social positive reinforcement [SPR]) is related to self-injury and its role in coping with trauma symptoms. From this perspective, self-injury can be reinforced through both positive and negative reinforcement, and appears to be increasingly reinforcing across repeated episodes of self-injury (Gordon et al., 2010). The following section discusses the potential reinforcing properties of self-harming behaviors in the context of coping with trauma-related symptoms (see Figure 1 for an overview).

**ANR.** According to the ANR function, aversive thoughts, feelings, and/or intrusive thoughts precede self-injury (Nock & Prinstein, 2004); self-injury, in turn, is reinforced due to the

subsequent self-reported sense of relief or reduction in negative affect (Klonsky, 2007; Nock & Prinstein, 2004). This function is the most widely studied and most commonly endorsed among self-injurers. Support for the role of physiological arousal reduction and negative affect regulation also comes from an experimental study by Franklin and colleagues (2010). This study found support for the ANR function such that physiological arousal was decreased following a pain task which the authors referred to as a *self-injury proxy* (Franklin et al., 2010). A similar reduction in physiological arousal has been shown following self-injury imagery scripts (Brain, Haines, & Williams, 1998; Haines, Williams, Brain, & Wilson, 1995; Welch, Linehan, Sylvers, Chittams, & Rizvi, 2008). Accordingly, self-injurers may be experiencing the physiological arousal common in PTSD and engage in self-injury as a way to cope with this arousal.

There is evidence to suggest that trauma-related symptoms precede acts of self-injury. Aversive self-awareness, including negative emotions such as shame, sadness, hostility, and fear is related to self-injury (Arney & Crowther, 2008), and self-injurers reported more intense emotional experiences than non-injurers (Anderson & Crowther, 2012). Research indicates increased negative affect prior to self-injury, utilizing ecological momentary assessment technology, with negative affect peaking during self-injury and fading gradually afterward

(Arney, Crowther, & Miller, 2011). Recent self-injurers endorsed significantly more hostility, anger, and sadness than past self-injurers and noninjurers (Brown et al., 2007), suggesting that these emotions may be particularly involved in the maintenance of self-injury behaviors. Taken together, there is convincing evidence for self-injury serving the function of alleviating acute negative affect or aversive affective arousal (Klonsky, 2007).

With many individuals reporting the function of self-injury to relieve negative emotions, unpleasant or intrusive thoughts or feelings, and to release anger, tension, or emotional pain (Batey, May, & Andrade, 2010; Gratz, 2003), there is an important connection to trauma symptoms. Self-injury can serve to end racing thoughts or flashbacks (Briere & Gil, 1998) and is particularly relevant for Cluster A symptoms, such as reexperiencing and intrusive thoughts and memories. An individual may be experiencing overwhelming emotions in connection to having experienced a trauma and may engage in self-injury as a means of decreasing these emotions. The decrease in negative emotions reinforces the act of self-injury, thereby perpetuating the coping function of self-injury in response to trauma symptoms. Supporting this view, Briere and Gil (1998) found that in a sample of self-injurers recruited from the community and abuse survivor conferences (93% reported sexual abuse; 73% with a PTSD diagnosis), almost 40% reported engaging in self-injury to stop flashbacks, 58% reported self-injury as a distraction from painful memories, and 38% to stop guilt.

Additionally, a key component of the Cluster B avoidance symptoms is experiential avoidance, characterized by an unwillingness to experience aversive internal states (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). According to the experiential avoidance model, self-injury serves as a way to eliminate, reduce, or avoid unpleasant internal experiences and sensations, and is conceptualized as a coping mechanism (Chapman et al., 2006). Consistent with this model, self-injurers reported greater unwanted inner experiences, as well as significantly more thought suppression (Howe-Martin, Murrell, & Guarnaccia, 2012) and nonacceptance of negative emotions (Muehlenkamp, Kerr, Bradley, & Larsen, 2010). Individuals with a past history of self-injury reported significantly greater acceptance of emotional experiences compared to those endorsing recent self-harm (Anderson & Crowther, 2012), indicating that unwillingness to experience unpleasant emotions may be perpetuating self-harm behaviors.

**APR.** APR refers to numb or dissociative states preceding self-injury, which is then followed by the generation of feeling after engaging in self-injury. From the APR perspective, self-injury is performed with the purpose of *generating* feeling (Nock & Prinstein, 2004), rather than avoiding or reducing them. Preceding self-injury, individuals reported numbness and feeling unreal (Kleindienst et al., 2008), but positive feelings and emotions (e.g., euphoria, feeling alive) followed self-injury (Kleindienst et al., 2008; Sacks et al., 2008). In an adolescent sample, trauma symptoms were most closely associated with this

function (Nock & Prinstein, 2005). APR was correlated with anhedonia, inactivity, and psychic numbness (Nock & Prinstein, 2005), and these symptoms may precede self-injury.

**Avoidance and numbing symptoms.** Consistent with the APR perspective, self-injury also serves the function of ending depersonalization, derealization, or dissociation through the generation of feelings (Gratz, 2003; Klonsky, 2007), indicating an important role of the Cluster B symptoms (e.g., avoidance and numbing). In support of this, self-injurers reported higher dissociation and childhood trauma (Batey et al., 2010). Similarly, higher levels of dissociation were associated with a greater risk of self-cutting (Tolmunen et al., 2008) and dissociation was a strong predictor of frequency of self-injury for both females and males (Gratz et al., 2002). Self-injury is also associated with alexithymia, which is related to the Cluster B symptoms of experiential and emotional avoidance (Howe-Martin et al., 2012; Polk & Liss, 2007). From this perspective, an individual may engage in self-injury in order to feel something in an effort to end a dissociative state or emotional numbing. Through the generation of feelings, self-injury is reinforced as a way to cope with the numbing and avoidance symptoms in Cluster B.

**Self-punishment.** Another component of the APR factor is self-punishment (Nock & Prinstein, 2004), which appears to be related to greater levels of trauma symptoms (Bennett, Beck, & Clapp, 2009). In college samples, 32–43% of self-injurers reported self-punishment as a motive for their behavior (Aizenman & Jensen, 2007; Heath, Ross, Toste, Charlebois, & Nedecheva, 2009). Self-injury is thought to be related to coping with emotional states and feelings associated with traumatic experiences through self-punishment (Bennett et al., 2009; Pietrzak, Harpaz-Rotem, & Southwick, 2011). In line with this, self-injury served the function of aiding an individual to disparage or express emotions toward oneself (Gratz, 2003; Kleindienst et al., 2008; Klonsky, 2007). Accordingly, there may be a particular punitive function that self-injury serves to deal with some of the emotions associated with traumatic experiences.

**Social Functions of Self-Injury.** Given the association between self-injury and unstable interpersonal relationships (Muehlenkamp, Ertelt, Miller, & Claes, 2010) and poorer relationships with parents (Martin, Bureau, Cloutier, & Lafontaine, 2011), the social component of self-injury also warrants discussion. Prinstein and colleagues (2010) found a peer socialization effect such that friends' self-injurious behaviors subsequently predicted the behaviors of adolescent girls, further supporting the association between self-injury and social processes. Social functions pertain to interpersonal dimensions of self-injury such as establishing barriers or getting attention or a cry for help. These social functions were commonly endorsed by adolescents (Lloyd-Richardson et al., 2007) and college students (Heath et al., 2009).

Although not receiving as much attention, the social contingencies of the four-factor model (Nock & Prinstein, 2004) suggest that social functions may play a role in coping with trauma

symptoms following interpersonal trauma. The SPR function of self-injury is performed to gain access to resources in the environment or to get attention from others (Nock & Prinstein, 2004). Positive reinforcement can occur through eliciting attention or sharing feelings. In retrospective ratings, self-injurers reported a motive of gaining attention or demonstrating a level of suffering (Kleindienst et al., 2008) and roughly half of the college student self-injurers endorsed engaging in self-injury to communicate hurting (Heath et al., 2009). With regard to trauma symptoms, the SPR function may relate best to the Cluster B symptoms, particularly the symptom of feeling cut off or distant from others, such that engaging in self-injury serves as a way to connect with others. Following self-injury, others might recognize the individual's suffering or give attention to the individual.

In contrast, the SNR function may be related to coping with trauma symptoms in that many self-injurers report engaging in self-injury to stop hurt by others (Briere & Gil, 1998) and self-isolation is a coping strategy strongly related to self-injury (Christian & McCabe, 2011). The SNR function is least commonly endorsed and studied (Nock, Holmberg, Photos, & Michel, 2007). In this function, self-injury is performed to remove some interpersonal demand, such as avoiding punishment or unpleasant activities (Nock & Prinstein, 2004). Setting interpersonal boundaries by asserting autonomy or distinction from others is a function of self-injury (Gratz, 2003; Klonsky, 2007). In summary, self-injury serves a number of functions and there is preliminary evidence that it serves as an overall strategy for coping with trauma symptoms (see Table 1 for a review of key findings).

### *Preliminary Support for Trauma Symptoms as a Mediator*

With the functional role self-injury plays in coping with trauma symptoms, it would be expected that trauma symptoms would serve as an underlying mechanism. Accordingly, research provides preliminary support for the mediating role of trauma symptoms in the association between various traumatic experiences and self-injury. For example, in an adolescent female sample (129 maltreated and 82 nonmaltreated), trauma symptoms, depressive symptoms, and psychological dysregulation (defined as affective, cognitive, and behavioral dysregulation), each mediated the relation between childhood maltreatment and self-injury when tested as mediators separately. However, when tested as mediators simultaneously, only trauma symptoms accounted for the relation between childhood maltreatment and self-injury (Shenk, Noll, & Cassaerly, 2010). This suggests the importance of trauma symptoms in self-injury, over and above other psychiatric symptoms such as depression and psychological dysregulation.

Few mediation studies have examined the role of specific trauma symptom clusters and self-injury. Weierich and Nock (2008) found reexperiencing (Cluster A) and avoidance/numbing (Cluster B) symptoms significantly mediated the relation between childhood sexual abuse and self-injury. Weaver, Chard, Mechanic, and Etzel (2004) found arousal symptoms (Cluster C) significantly predicted self-injurious behaviors and

mediated the relation between early age of sexual abuse and self-injury. Of note, Weaver and colleagues examined these relations in a sample of female survivors of childhood sexual abuse, thereby limiting the generalizability of the findings. Although these studies specifically focused on childhood sexual abuse, they provide support for the mediating role of trauma symptoms in the link between traumatic experiences and self-injury.

In addition to mediation analyses examining the relation between trauma symptoms or clusters more globally, studies on *specific* trauma symptoms have been conducted. Dissociation (a Cluster B symptom) has been found to mediate the relation between childhood sexual abuse and self-harm (Low et al., 2000; Yates, Carlson, & Egeland, 2008). Swannell and colleagues (2012) not only examined dissociation, which was found to mediate the relation between childhood maltreatment and self-injury, but also examined alexithymia and self-blame. They found that alexithymia mediated the relation between childhood maltreatment and self-injury, but only for females. Similar findings were shown in a sample of female undergraduate students, such that alexithymia fully mediated the relation between childhood maltreatment (all forms combined) and self-injury as well as each of the relations between physical abuse, emotional abuse, physical neglect, emotional neglect, and self-injury (Paivio & McCulloch, 2004). Alexithymia, however, did not mediate the relation between sexual abuse and self-injury. These cross-sectional studies provide support for avoidant and numbing symptoms as key mechanisms in the relation between traumatic experience and self-injury.

Given that a negative cognitive style, a trauma-related symptom, was prospectively predictive of self-injury (Hankin & Abela, 2011), it is not surprising that elements of negative cognitions (e.g., pessimistic explanatory style, self-criticism, self-blame) have also been shown to mediate the relation between traumatic experiences and self-injury. After controlling for age, pessimistic explanatory style partially mediated the relation between childhood emotional abuse and self-injury in a sample of college students (Buser & Hackney, 2012). Relatedly, self-directed cognitions and emotions are hypothesized to play a role in self-injury (Klonsky & Muehlenkamp, 2003). Self-blame mediated the relation between childhood maltreatment and self-injury in a sample of Australian adults (Swannell et al., 2012). In an adolescent sample, self-criticism partially mediated the relation between childhood emotional abuse and self-injury (Glassman, Weierich, Hoolley, Dilberto, & Nock, 2007); notably, when depression was added as a covariate, emotional abuse was no longer associated with self-injury. Although these studies employed cross-sectional mediation analyses, they nonetheless also provide preliminary evidence of the mediating role of trauma symptoms in the relation between trauma and self-injury (see Table 2 for a summary).

### *Limitations*

Although there appears to be theoretical and empirical support for the role of trauma symptoms in self-injury, this is

**Table 1.** Summary of Main Findings on the Relation of Trauma Symptoms and Self-Injury.

Authors	Sample	Key Findings
Aizenman and Jensen (2007)	1,302 Undergraduate students (41% reporting self-injury)	Self-injurers commonly endorsed the following motives for self-injury: eliminate emotional pain, self-punishment, and self-hatred
Armev and Crowther (2008)	225 Undergraduate students	Aversive self-awareness (including trauma-related responses such as shame, sadness, hostility, and fear) was related to self-injury
Armev, Crowther, and Miller (2011)	36 Undergraduates with a history of self-injury	During self-injury, negative affect (aversive mood states and general distress) peaked and gradually faded following self-injury
Anderson and Crowther (2012)	214 Undergraduate students	Self-injurers reported more difficulty identifying their emotions and less acceptance of their emotional experiences
Batey, May, and Andrade (2010)	432 University students (undergraduate and graduate) and staff members	Compared to noninjurers, self-injurers reported more negative intrusive thoughts and higher levels of dissociation. Authors suggested negative intrusive thoughts may play a causal role in self-harm
Bornovalova, Tull, Gratz, Levy, and Lejuez (2011)	180 Inpatients receiving drug/alcohol treatment	Trauma symptoms were associated with a 5.5-fold increase in the odds of reporting self-injury, whereas sexual abuse was associated with a 2-fold increase
Briere and Gil (1998)	93 Individuals with history of self-injury	Self-injurers reported engaging in self-injury to stop flash backs, stop guilt and hurt by others, as a distraction for painful feelings and memories, as self-punishment and to get rid of anger
Brown, Williams, and Collins (2007)	223 Undergraduate students	Recent self-injurers endorsed more hostility, anger, and sadness than past injurers and noninjurers
Gratz, Conrad, and Roemer (2002)	133 Undergraduate students	Dissociation was a stronger predictor of the frequency of self-injury than various types of abuse and neglect
Gratz (2003)	Review of self-injury functions	Individuals engage in self-injury to relieve negative emotions, unpleasant thoughts or feelings, and to release anger, tension, or emotional pain
Hall (2003)	Review of dissociation in female survivors of child abuse	Dissociation, including elements such as depersonalization and derealization, plays an important role in the relation between abuse and self-injury
Harned, Rizvi, and Linehan (2010)	94 Female outpatients with BPD	Comorbid PTSD and BPD (compared to BPD alone) was related to greater frequency of self-injury and trauma-related triggers of self-injury. Individuals in both groups reported over 25 lifetime traumatic events
Heath, Ross, Toste, Charlebois, and Nedecheva (2009)	23 Undergraduate students with a history of self-injury	43.5% endorsed engaging in self-injury to punish themselves. 61.9% reported engaging in self-injury to relieve/escape unwanted thoughts and feelings
Howe-Martin, Murrell, and Guarnaccia (2012)	211 Adolescents (ages 13–18)	Self-injurers reported greater unwanted experiences, thought suppression, and alexithymia
Kleindienst et al. (2008)	101 Females with BPD and history of self-injury	Preceding acts of self-injury, self-injurers reported feelings of numbness and unreality. Reversal or control over dissociative states was reported as important motives
Klonsky (2007)	Review of self-injury functions	Self-injury serves to alleviate acute negative or aversive affective arousal. It can also serve to end symptoms of depersonalization or dissociation
Klonsky and Muehlenkamp (2003)	Review of self-injury functions	Self-injury is an expression self-directed anger and/or disgust
Mueser and Taub (2008)	69 Adolescents (ages 11–17)	Having a diagnosis of PTSD was associated with greater likelihood of self-injury

*(continued)*



**Table 1.** (continued)

Authors	Sample	Key Findings
Nock and Prinstein (2004)	89 Adolescent psychiatric inpatients (ages 12–17)	Reported functions of self-injury that conceptually are related to coping with trauma symptoms. The automatic negative reinforcement (ANR) function refers to aversive thoughts and feelings preceding self-injury and is reinforced by removal or escape from these states. Automatic positive reinforcement (APR) refers to numb or dissociative states preceding self-injury, which then reinforce self-injury by a generation of feeling. Self-punishment is another component of the APR factor
Nock and Prinstein (2005)	89 Adolescent psychiatric inpatients (ages 12–17)	Trauma symptoms, such as anhedonia, inactivity, and psychic numbness were associated with the automatic positive reinforcement function of self-injury
Nock, Joiner, Gordon, Lloyd-Richardson, and Prinstein (2006)	89 Adolescent psychiatric inpatients (ages 12–17)	Self-injurers had elevated rates of PTSD, indicating the presence of clinically significant trauma symptoms
Paul, Schroeter, Dahme, and Nutzinger (2002)	376 Female inpatients with an eating disorder diagnosis	Compared to noninjurers, self-injurers endorsed higher levels of dissociation
Polk and Liss (2007)	414 Individuals (194 undergraduate students, 220 self-injurers seeking online help)	Two components of alexithymia, difficulty identifying and describing feelings, differentiated community self-injurers from noninjurers and college self-injurers
Rüsch et al. (2007)	60 Females with BPD	Comorbid PTSD and BPD, compared to BPD alone, was related to more self-injurious behaviors
Sacks, Flood, Dennis, Hertzberg, and Beckham (2008)	509 Male veterans with PTSD	Compared to noninjurers, self-injurers reported higher levels of trauma symptoms. Self-injurers also reported higher levels of depression and hostility
Tolmunen et al. (2008)	4,019 Adolescents (ages 13–18)	Feelings of dissociation were associated with greater risk of self-cutting and was a risk factor for self-harm
Weismore and Esposito-Smythers (2010)	263 Adolescent inpatients (ages 13–18)	For abuse victims, negative self-views were associated with elevated rates of self-injury
Zanarini, Laudate, Frankenburg, Reich, and Fitzmaurice (2011)	290 Individuals with BPD	Dissociative symptoms and depression were risk factors for self-harm
Zlotnick et al. (1996)	148 Female psychiatric inpatients	The relation between childhood sexual abuse and self-injury was no longer significant after controlling for dissociation and alexithymia. Dissociation was a significant independent predictor of self-injury
Zlotnick et al. (1997)	85 Inpatients receiving substance abuse treatment	Self-injurers endorsed elevated levels of dissociation, compared to noninjurers
Zlotnick, Mattia, and Zimmerman (1999)	256 Psychiatric outpatients	Higher levels of dissociation were positively related to self-injury, above the presence of BPD and childhood abuse. Rates of PTSD were significantly higher in frequent self-injurers, as compared to infrequent self-injurers

Note. BPD = borderline personality disorder; PTSD = posttraumatic stress disorder.

notwithstanding exceptions. Not all self-injurers report experiencing a trauma or trauma symptoms. Conversely, there is a significant percentage of individuals meeting criteria for PTSD, and/or suffering from trauma symptoms, but not reporting self-injury. Furthermore, some individuals report using self-injury to overcome boredom (Lloyd-Richardson et al., 2007), a function that appears unrelated to coping with trauma symptoms. There may also be instances in which traumatic experiences rather than trauma symptoms may be more strongly related to self-injury. For example, although

occurrences of childhood maltreatment predicted self-injury in a sample of psychiatric outpatients, dissociation (a trauma-related symptom) did not (Wachter, Murphy, Kennerley, & Wachter, 2009); however, other trauma-related or psychiatric symptoms may have accounted for this relation.

These points suggest that self-injury is complex and multifactorial. Notably, the majority of studies published in this area rely on clinical samples with certain diagnostic features (e.g., BPD, PTSD), thereby limiting the scope of this review. As such, the relation between self-injury and trauma symptoms

**Table 2.** Summary of Studies Examining the Mediating Role of Trauma Symptoms in Self-Injury.

Authors	Sample	Predictor	Mediator	Main Findings
Buser and Hackney (2012)	390 College students	Childhood emotional abuse	Pessimistic explanatory style	Pessimistic explanatory style partially mediated the relation between childhood emotional abuse and self-injury, even after controlling for age
Glassman, Weierich, Hooley, Dilberto, and Nock (2007)	86 Adolescents (ages 12–19)	Childhood emotional abuse	Self-critical cognitive style	Self-criticism partially mediated the relation between childhood emotional abuse and self-injury
Low, Jones, MacLeod, Power, and Duggan (2000)	50 Females (13 nonharms, 22 infrequent harms, 15 frequent harms)	Childhood sexual abuse	Dissociation	Dissociation mediated the relation between childhood sexual abuse and self-harm. Higher levels of dissociation was related to increased frequency of self-injury
Paivio and McCulloch (2004)	100 Female undergraduates	Childhood maltreatment	Alexithymia	Alexithymia fully mediated the relation between emotion abuse, emotional neglect, physical abuse, physical neglect, and self-injury. Alexithymia did not mediate the relation between sexual abuse and self-injury
Rodriguez-Srednicki (2001)	435 Female college students	Childhood sexual abuse	Dissociation	Dissociation mediated the relation between childhood sexual abuse and self-injury
Shenk, Noll, and Cassaerly (2009)	129 Maltreated and 82 nonmaltreated females (ages 14–18)	Childhood maltreatment (including neglect, physical, and sexual abuse)	PTSD symptoms	Trauma symptoms, depressive symptoms, psychological dysregulation all mediated the effect of abuse and self-injury independently, when entered into a single mediation model. However, in a multimediation model, only trauma symptoms mediated self-injury, over and above symptoms of depression and psychological dysregulation
Swannell et al. (2012)	11,423 Australian adults	Childhood maltreatment (physical abuse, sexual abuse, neglect)	Dissociation Alexithymia Self-blame	Controlling for age and psychiatric diagnoses, self-blame and dissociation mediated the relation between childhood maltreatment and self-injury. Alexithymia was also a significant mediator for females
Weaver, Chard, Mechanic, and Etzel (2004)	Female Adult survivors of childhood sexual abuse	Early age of sexual abuse	PTSD arousal symptoms	PTSD arousal was a significant predictor of self-injurious behaviors. PTSD arousal symptoms mediated the relationship between early age of sexual abuse and self-injury
Weierich and Nock (2008)	86 Adolescent sample	Childhood sexual abuse	Cluster A (reexperiencing) Cluster B (avoidance/numbing)	Reexperiencing and avoidance/numbing significantly mediated relations between childhood sexual abuse and self-injury, controlling for depressive symptoms
Yates, Carlson, and Egeland, (2008)	83 Males, 81 females (age 26)	Childhood sexual abuse	Dissociation	Dissociation mediated the relation between childhood sexual abuse and self-injury

Note. PTSD = posttraumatic stress disorder.

may be inherently different for self-injury in the general population compared to treatment-seeking women with BPD or adolescent psychiatric inpatients. Very few studies have examined self-injury in a nonclinical sample, which may be more reflective of the general population; there could be striking differences in the development, maintenance, and functions of self-injury depending on the clinical and demographic characteristics of the sample.

### Future Directions

This review suggests that trauma symptoms could be an important mechanism underlying self-injurious behaviors. It appears that self-injury plays a functional role in coping with trauma symptoms and that trauma symptoms play a mediating role. Together, these points are associated with important implications and future directions. Both self-injury and trauma symptoms should be assessed in future studies (e.g., epidemiological studies) as well as in clinical settings. Traumatic events are prevalent in the general population (up to 80% of individuals; Sledjeski et al., 2008); yet, the prevalence of PTSD is markedly lower (6.8%; Kessler et al., 2005). Although not everyone suffers from trauma symptoms for a prolonged period of time, the high prevalence of traumatic events suggests the presence of subthreshold PTSD (Zlotnick et al., 2002) as well as trauma symptoms in the absence of a PTSD diagnosis. Assessing trauma and trauma-related symptoms can contribute to the understanding of the psychological correlates of self-injury, specifically enabling the further examination of trauma symptoms as an underlying mechanism.

**Clinical Implications.** Targeting comorbid trauma symptoms and self-injury in treatment settings is an important future direction. In a pilot study examining the efficacy of the combined treatment of prolonged exposure (Foa, Hembree, & Rothbaum, 2007) and dialectical behavior therapy (Linehan, 1993a, 1993b), there were significant reductions in trauma symptoms and suicidal ideation and only 27.3% engaged in self-injury during the course of treatment (Harned, Korslund, Foa, & Linehan, 2012). Importantly, study participants included suicidal and/or self-injuring women with comorbid BPD and PTSD, limiting generalizability. Despite restricted samples, this study provides important preliminary support for the efficacy of a combined treatment to reduce trauma symptoms and self-injury. Gaining a better understanding of self-injury and its relation to trauma symptoms may be helpful in developing therapeutic approaches that are safe and efficacious in treating individuals who engage in self-injury.

**Initiation, Maintenance, and Offset of Self-Injury.** Future studies should investigate the prospective and longitudinal relation examining traumatic events, trauma symptoms, and self-injury, in addition to other risk factors for self-injury. Although research suggests a temporal relation of traumatic events (such as sexual abuse) preceding the self-injury (Weierich & Nock, 2008; Wiederman et al., 1999), it has not been widely studied.

These studies would also aid in understanding the onset and offset of self-injury, which is of particular importance to the field. Of the college students who reported no longer engaging in repetitive self-injury (at least two acts at some point during their lives), 80% reported stopping their self-injury within 5 years of its onset and 40% had stopped within 1 year (Whitlock et al., 2006). Interestingly, there is also a substantial reduction in trauma symptoms within the first year following traumatic experiences (Rothbaum et al., 1992); this may be related to the decrease in self-harming behaviors within a year of onset. From a developmental psychopathology framework, childhood trauma, such as maltreatment, may disrupt positive development and interfere with adaptive skill development (Yates, 2004). As such, trauma during certain developmental periods, such as in younger individuals prior to positive adaptation, could be particularly disruptive and may contribute to maladaptive coping strategies such as self-injury.

Additionally, understanding the function of self-injury from Compas, Conner-Smith, Saltzman, Thomsen, and Wadsworth's (2001) stress and coping framework may aid in understanding the onset and maintenance of self-injury. According to Compas et al. model, there are responses to stress that are under conscious control, such as trauma symptoms, which are involuntary and automatic. There are also responses to stress that are volitional and under conscious control, referred to as *coping responses*. Self-injury may serve the purpose of generating emotion (primary control engagement coping), distracting oneself from the trauma (secondary control engagement coping), or avoiding one's emotions (disengaged coping). Research has documented that the use of primary coping responses in the face of uncontrollable stressors (e.g., traumas) and disengagement coping are related to increased internalizing and externalizing problems, as well as impairments in social functioning (see Compas, Conner-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Thus, understanding the functions of self-injury, and the way in which it may be a coping response, may help in understanding the short- and long-term implications of self-injury for one's overall mental health and adjustment. Furthermore, supporting the predictive role of trauma symptoms in self-injury, Compas and colleagues noted that involuntary responses to stress and trauma, such as PTSD symptoms, may predict coping responses (e.g., self-injury). Bridging various areas of developmental, clinical, and social psychology will be beneficial in more fully understanding this phenomenon.

### Conclusion

This review examined the role of trauma symptoms in self-injury. The literature indicates that investigating trauma symptoms could be particularly helpful in the conceptualization of functions and associated processes related to self-injury. Currently, limitations in the understanding of self-injury follow from examining these behaviors within limiting diagnostic frameworks (e.g., BPD, PTSD, etc) or sample selections (e.g., inpatients, females, etc.). This precludes an

accurate portrayal of the role of trauma symptoms in self-injury. Interestingly, the inclusion of NSSI disorder has been proposed for the *DSM-5* (American Psychiatric Association, in press). This diagnosis would shift the focus to self-injury as the unifying presenting problem rather than the examination of self-injury as a symptom of another disorder. In a preliminary study on NSSI disorder, the proposed diagnosis was characterized by high depression, anxiety, and suicidality; low functioning; and a 2-fold increase in the odds of endorsing a history of abuse (Selby et al., 2012). Selby, Bender, Gordon, Nock, and Joiner (2012) also found distinct differences between individuals with BPD and those with NSSI disorder, highlighting the limitations of self-injury research as a symptom of BPD.

In summary, there is mixed evidence for the relation between self-injury and traumatic experiences that is at least partially explained by the increased risk of psychiatric problems (Klonsky & Moyer, 2008), such as trauma symptoms. We have reviewed the relation between traumatic events and self-injury, and postulated the mediating role of trauma symptoms in this relation. At present, there is preliminary evidence from studies with cross-sectional designs that indicates that self-injury plays a functional role in coping with trauma symptoms, suggesting the underlying mechanism of trauma symptoms; longitudinal designs, in contrast, may allow for more cogent statements about temporal relations. Overall, gaining understanding of the complex interplay between traumatic experiences, trauma symptoms, and self-injury can help advance this area of research by allowing for better identification of at-risk groups and the development or refinement of empirically supported treatments and prevention programs.

### *Implications of the Review for Practice, Policy, and Research*

- Self-injury and trauma symptoms should be assessed in epidemiological studies. Future studies should investigate the relation between self-injury and trauma symptoms, in prospective and longitudinal study design. This would aid in the identification of critical prevention and intervention timeframes.
- It is critical to develop therapeutic approaches that are safe and efficacious in treating individuals that engage in self-injury. Targeting trauma symptoms may be a promising avenue to explore.
- Transdiagnostic inclusion criteria not restricted to a certain diagnosis such as borderline personality disorder or posttraumatic stress disorder should be applied to better capture the role of trauma symptoms.
- Gaining understanding of the complex interplay between traumatic experiences, trauma-related symptoms, and self-injury can provide better identification of at-risk groups and the development or refinement of empirically supported treatments and prevention programs.

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