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Non-Suicidal Self-Injury Within Offender Populations: A Systematic Review

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Non-suicidal self-injury (NSSI), defined as deliberate self-directed tissue damage, presents a serious health concern for offender populations. Approximately one-third of offenders report a history of NSSI, and it is the most common reason for mental health treatment within correctional settings. To date, no review exists with a specific focus on NSSI in criminal justice contexts. Therefore, the primary aim of this article is to review research on NSSI within correctional settings. Specifically, we explore the role of risk factors for NSSI. We also examine the functions of NSSI within correctional contexts. In addition, we evaluate the evidence for potential assessment tools and treatments for NSSI. Taken together, our review suggests that risk factors for NSSI must be considered differently in correctional settings, due to the high base rates of these vulnerabilities. Further, although environmental control is a more salient function of NSSI within correctional settings, the primary motive for engaging in this behavior remains emotion regulation. Finally, despite the emergence of several promising treatments for NSSI within correctional settings, larger scale studies are necessary to determine the efficacy of these interventions.

Keywords: self harm, self-injury, offenders

Non-suicidal self-injury (NSSI) is a serious health concern for offender populations. NSSI involves deliberate, self-directed tissue damage, such as cutting or burning (www.isssweb.org, International Society for the Study of Self-Injury, 2007). Between 7% (Lader, Singleton, & Meltzer, 2003) and 48% (Chapman, Specht & Cellucci, 2005) of offenders report a history of engaging in NSSI. Among mentally-disordered incarcerated offenders, the proportion of offenders identified as engaging in NSSI is even higher (61%; Gray et al., 2003; 48%; Loughran & Seewoonarain, 2005; 52.9%; Mannion, 2009). This rate far exceeds that of the general population, in which 4% of adults (Briere & Gil, 1998; Klonsky, Oltmanns, & Turkheimer, 2003) and 13 to 15% of adolescents (Ross & Heath, 2002) report a history of NSSI, and instead is more comparable to the high rates found among young adult undergraduate students (e.g., 35%; Gratz, 2001). Perhaps more alarmingly, 75% of lifetime incidences of NSSI for a large sample of youth in custody occurred in prison (Kenny, Lennings & Munn, 2008), and up to 24% of young offenders (Kirchner, Forns, & Mohino, 2008) and 35% of adult offenders (Sakelliadis, Papadodima, Sergentanis, Giotakos, & Spiliopoulou, 2010) engaged in NSSI while in custody, suggesting the prison environment may foster this behavior.

Individuals who engage in NSSI present a significant cost to institutional resources. Incarcerated offenders who deliberately injure themselves or threaten to injure themselves are often transferred from the general prison population to mental health treatment programs or special hospitals (Loughran & Seewoonarain, 2005; Melzer et al, 2004). In fact, studies reveal that 18% (Loughran & Seewoonarain, 2005) to 23% (Franklin, 1988) of offenders receiving mental health care were admitted because of NSSI or threat of NSSI, and 48% to 67% of those referred had a history of NSSI (Bland, Mezey & Dolan, 1999; Loughran & Seewoonarain, 2005). Moreover, after transfer to mental health treatment, inmates who engage in NSSI are more likely to be admitted to medium security psychiatric care than low security care (Melzer et al., 2004).

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More critical than the costs to institutions, NSSI results in staggering personal costs. Self-injury is significantly associated with suicide (Kendall's Tau B = .40, Loughran & Seewoonarain, 2005). In fact, NSSI is the strongest predictor of suicide attempts (van Egmond & Diekstra, 1989) and completed suicides (Gunnell & Frankel, 1994; Sakinofsky, 2000), even after controlling for sex, age, and psychopathology (e.g., Joiner et al., 2005). Nearly 50% of people who commit suicide have a history of NSSI (Hawton, Houston, & Shepperd, 1999). A history of NSSI is also a robust predictor of suicide among offender populations (Almasi et al., 2009), both while incarcerated (e.g., Borrill, 2002) as well as post-release suicide (Pratt, Appleby, Piper, Webb, & Shaw, 2010). Some (e.g., Joiner et al., 2005) have suggested that NSSI serves as "practice" for engaging in self-destructive behaviors, and thus may act as training for later suicide attempts. It is vital that providers attend to NSSI, given its role in putting individuals at risk for later suicide attempts.

Given the cost of NSSI, it is crucial to identify the correlates and functions of this behavior to develop effective interventions. The base rates of many characteristics of NSSI vary by sample and setting. Therefore, it is necessary to consider the context in which NSSI occurs. Although illuminating, existing reviews have either reviewed non-correctional samples (Gratz, 2003), or did not differentiate self-injury with intent to die from NSSI (Lohner & Konrad, 2007). Thus, to date, no reviews exist with a specific focus on NSSI in criminal justice contexts, despite its prevalence in such settings. The aim of this article is to integrate existing research on NSSI within correctional settings. Correlates of NSSI in these contexts are discussed, as well as potential management strategies. Specifically, we explore potential risk factors for NSSI, such as demographic characteristics, psychiatric diagnoses, coping styles, emotional vulnerability, and childhood experiences. Also, the functions of NSSI in correctional settings are discussed. Finally, assessment and treatment options are evaluated in terms of their efficacy and limitations.

METHOD

We conducted a search of five databases: Criminal Justice Abstracts, PsycBooks, PsycInfo, PsycArticles, and Medline Full Text for relevant research related to NSSI and correctional settings. Our search terms were: (self-harm, self-injur*, or self-mutilat*) and (forensic, correctional, inmate, jail, or prison*). To be included in this review, research needed to be empirical, primary source literature that met the following five criteria:

1. Written or translated into the English language
2. Published from 1980 to present
3. A definition of NSSI explicitly not including suicidality
4. A captive correctional population (including forensic psychiatric patients)
5. Pertaining to: risk factors, functions, assessment and/or treatment of NSSI

Our search returned 171 potential articles (not including duplicates), of which 15 articles were excluded because they were not primary source, empirical studies; 47 articles were excluded because they included suicidality in their definition of self-injury; 7 articles were excluded because NSSI data were not reported; 22 articles were not included because they did not have correctional samples or correctional samples were aggregated with clinical samples; and 34 articles were excluded because NSSI was not actually a variable of interest. These remaining 46 articles are summarized (see Tables 1–6), and presented alongside a selective review of NSSI within community and clinical contexts for the purpose of comparison.

DEFINITIONAL ISSUES

Research on NSSI has been hindered by the lack of consistent terminology. There has been considerable ambiguity in defining self-injurious behaviors, with multiple terms referring to multiple overlapping definitions. Initially, the term *parasuicide* was used to indicate an act with a nonfatal outcome that was aimed to harm the body (Kreitman, 1977), and encompassed all suicide attempts or self-injury (e.g., Linehan 1993), synonymous with *self-injurious behaviors* (Nock & Prinstein, 2004). These behaviors were aggregated together due to their common co-occurrence and phenotypic similarities. Others have considered it important to differentiate by level of intent to die (e.g., Linehan, 1993). The term *parasuicide* has also been used to indicate low levels of intent to die, whereas *attempted suicide* refers to behaviors accompanied by strong intent to die (Bille-Brahe, Jessen, Nielsen, Nielsen, & Schiodt, 1994). More specifically, the terms *self-mutilative behaviors* (e.g., Nock & Prinstein, 2004), *self-mutilation* (e.g., Favazza, 1998), *deliberate self-harm* (e.g., Pattison & Kahan, 1983), and *non-suicidal self-injury* (e.g., Muehlenkamp, 2006) have all referred to direct and deliberate tissue damage, inflicted without conscious intent to die. Some of these terms are used to describe self-injury that occurs along with developmental disabilities, or in response to psychotic delusions or command hallucinations (Jeglic, Vanderhoff, & Donovick, 2005). This type of self-injury has been conceptualized as "biologically-driven" and fundamentally distinct from NSSI (Favazza, 1998). Within this article, the term *non-suicidal self-injury* will be used to denote deliberate, self-inflicted tissue damage without intent to die.

Despite the substantial overlap between the populations of individuals who engage in NSSI and those who attempt suicide, it is important to conceptualize these behaviors as distinct. The presence or absence of intent to die may be a

TABLE 1
Rates of Non-Suicidal Self-Injury (NSSI) in Offender Populations

Study	Country	Inmate Gender	Sample	% of NSSI in Custody	% of NSSI Lifetime
Young Offender Inmate					
Kenny et al. (2008)	Australia	8% female	$N = 242$	4.5%	11%
Kirchner et al. (2008)	Spain	male	$N = 102$	24.0%	
Lader et al. (2003)	United Kingdom	mixed	$N = 590$		7%[1] & 11%[2]
Adult Inmate					
Chapman et al. (2005)	USA	female	$N = 105$		48.0%
Fotiadou et al. (2006)	Greece	male	$N = 80$ ($n = 40$[1] & $n = 40$[2])	15%	15%
Maden et al. (2000)	United Kingdom	male	$N = 1752$ ($n = 1349$[3] & $n = 402$[4])	5.0%	17%
O'Brien et al. (2003)	United Kingdom	female	$N = 771$	9%[1] & 10%[2]	
Sakelliadis (2010)	Greece	male	$N = 173$		35%
Smith et al. (2010)	United States	7% female	$N = 22\,983$	0.1%	
Vollm & Dolan (2009)	United Kingdom	female	$N = 638$		8.6%
Forensic Psychiatric Hospital/Treatment Unit					
Bland et al. (1999)	United Kingdom	female	$N = 87$		67%
Gray et al. (2003)	Wales	23% female	$N = 34$		53%
Loughran & Seewoonarain (2005)	United Kingdom	female	$N = 318$	18%	48%
Mannion (2009)	United Kingdom	male	$N = 57$	61%	
Staff Interviews					
Smith & Kaminski (2011)	United States	mixed	$N = 230$	2.4%	

[1]remand, [2]sentenced, [3]adult, [4]adolescents.

crucial feature to assess, although individuals sometimes report ambivalence regarding their level of intent to die (Brown, Comtois, & Linehan, 2002). Individuals who self-injure with suicidal intent often have different clinical presentations and histories from those who engage in NSSI (Fulwiler, Forbes, Santangelo, & Folstein, 1997). For instance, inmates who engaged in NSSI reported more impulsivity, whereas those with a history of suicidal behaviors reported more depressive symptoms (Lohner & Konrad, 2006). Further, individuals with a history of NSSI and suicide attempts attempted suicide during periods of time when they were not actively self-injuring (e.g., Walsh & Rosen, 1988). Moreover, although NSSI is strongly correlated with suicidal behavior, a considerable proportion of individuals with a history of NSSI never attempt suicide (e.g., 31% of female inpatients, Dulit, Fyer, Leon, Brodsky, & Frances, 1994; 41% of female adolescents, Schwartz, Cohen, Hoffman, & Meeks, 1989). Finally, the function of suicide is distinct from that of NSSI. The goal of suicide is to end one's life, whereas many researchers conceptualize NSSI as functioning to help individuals to cope with life (e.g., Gratz, 2003; Pattison & Kahan, 1983).

DESCRIPTIVE INFORMATION ON NSSI

The high incidence of NSSI within offender populations is pervasive across institutions. Among 590 young offenders in the U.K., 7% of male remand prisoners and 11% of female sentenced offenders engaged in NSSI (Lader et al., 2003). Similarly, in a mixed sample of both young and adult male offenders, 17% had a history of NSSI (Maden, Chamberlain, & Gunn, 2000). Higher lifetime rates of NSSI (34.8%) were evidenced among 173 Greek male prisoners (Sakelliadis et al., 2010). These studies, however, assessed lifetime NSSI, rather than NSSI in the correctional setting. In a national survey of 230 workers from 473 facilities in the U.K., nearly all (98%) of the respondents indicated that at least one inmate currently engaged in self-injury (Smith & Kaminski, 2011). Prison staff estimated that 2.4% of prisoners currently engaged in NSSI, although up to a third (32.3%) of inmates self-injured in some facilities. On average, 26 inmates ($SD = 50.9$) at each institution currently engaged in NSSI. Among 80 Greek male prisoners, 15% reported engaging in NSSI while in prison and the same percentage reported a history of NSSI (Fotiadou, Livaditis, Manou, Kaniotou, & Xenitidis, 2006; see Table 1 for rates of NSSI).

Many behaviors fall into the category of NSSI. A study investigating NSSI in a clinical setting (Briere & Gil, 1998) revealed that the most common form of NSSI was cutting (71%), followed by biting the inside of their mouths (60%), scratching (59%), and punching themselves (44%). Among inmates who self-injured while imprisoned, the most common form of NSSI was scratching (95.7%) or cutting themselves with an object (94.3%; Smith & Kaminski, 2011). Other common forms of self-injury included head banging (84.8%), scratching themselves without an object (82.2%), opening old wounds (81.3%), and inserting objects (70.9%). NSSI in correctional settings, especially forensic psychiatric

units, can take on severe forms. One study found incidences of eye enucleation and glass insertion into the vagina in a female secure special hospital in England (Bland et al., 1999) (see Table 2 for common forms of NSSI).

RISK FACTORS FOR NSSI

Demographic Characteristics and NSSI

Female offenders seem to be particularly susceptible to engaging in NSSI. In 2003, females were responsible for nearly half of the reported incidents of NSSI, despite only accounting for 6% of the offender population (Borrill, Snow, Medlicott, Teers, & Patton, 2005). This stands in contrast to recent data on gender differences in NSSI, which revealed comparable rates of NSSI among males and females (Briere & Gil, 1998; Klonsky et al., 2003). Rates of NSSI are higher among Caucasians, in comparison with non-Caucasians, across community and correctional samples (Borrill et al., 2003; Gratz, 2006; Maden et al., 2000; Marzano, Fazel, Rivlin, & Hawton, 2010; O'Brien, Mortimer, Singleton, & Meltzer, 2003). In one study, however, black and multi-racial females with substance dependence had higher rates of NSSI than Caucasians (Borrill et al., 2003). Further, one study of NSSI within the prison population of South Carolina was significantly related to single marital status and low levels of education (Smith & Kaminski, 2010; see Table 3 for risk factors for NSSI).

Psychopathology and NSSI

Research on the association between Axis I psychopathology and NSSI has yielded robust findings. Among clinical, non-offender samples, symptoms of psychopathology have been linked to increased NSSI frequency (Zlotnick, Mattia, & Zimmerman, 1999). Similarly, 86% of self-injuring inmates in one study had at least one Axis I diagnosis, although this study had a small sample ($N = 8$), and did not use validated diagnostic measures (Mangnall & Yurkovich, 2010). More specifically, NSSI is associated with self-reported depressive symptoms (among males; Carli et al., 2010; and females; Vollm & Dolan, 2009), psychotic symptoms (among females; O'Brien et al., 2003; Marzano et al., 2010) and impulsivity (among males; Carli et al., 2010; and females; Wilkins & Coid, 1991) among inmates in the U.K. and Italy. NSSI is also related to substance use issues in incarcerated populations. Male inmates on remand with self-reported substance use issues were more likely to have a history of NSSI (33%) compared with those without a reported history of substance use issues (21%; Brooke, Taylor, Gunn, & Maden, 2000). Further, within a sample of Australian inmates, 21% of males and 43% of females reported urges to engage in NSSI and 13% of males and 27% of females acted on these impulses while under the influence of alcohol (Hunter, 1988). Among forensic psychiatric patients, no psychiatric diagnoses (derived from medical records) differentiated those that engaged in recurrent NSSI from those with a single self-injury incident (Hillbrand, Young, & Krystal, 1996). This may be an artifact of the comparison group, however, who presumably were referred to receive psychiatric services for reasons other than self-injury.

In addition, a diagnosis of any Axis II personality disorder predicts NSSI in correctional settings. Female inmates with a personality disorder diagnosis who transferred to an inpatient health ward from a U.K. prison had higher rates of NSSI than those without personality disorders. While considering this data it should be taken into account that diagnoses were not ascertained using validated methods, and at times, were

TABLE 2
Common Forms of Non-Suicidal Self-Injury (NSSI) in Offender Populations

Study	Country	Gender	Sample	Most Common Forms of NSSI	Other Forms of NSSI
Young Offender Inmates					
Kenny et al. (2008)	Australia	8% female	$N = 242$	Cutting (6%)	Asphyxiation (2%); head banging (2%); punching/kicking things (1%)
Adult Inmates					
Sakelliadis (2010)	Greece	male	$N = 173$	Wrist cutting (58%); skin piercing (56%)	Scratching (44%); skin picking (42%); burning (26%)
Forensic Psychiatric Hospital/Treatment Unit					
Bland et al. (1999)	United Kingdom	female	$N = 87$		Bizarre cases: enucleation of the eye & glass insertion into the vagina
Mannion (2009)	United Kingdom	male	$N = 57$	Cutting (55% of all incidences of NSSI; 34% of the sample); hitting an object (13% of all incidences; 51% of the sample)	Scratching (31%); head banging (23%); punching self (20%); hunger strike (5%), burning self (4%); tying up body parts (2%)
Staff Interviews					
Smith & Kaminski (2011)	United States	mixed	$N = 230$	Scratching (96%); cutting (94%)	Head banging (85%); scratching without an object (82%); opening old wounds (81%); inserting objects (71%)

TABLE 3
Risk factors Related to NSSI in Offender Populations

Study	Country	Sample	Findings
Borrill et al. (2003)	United Kingdom	$N = 301$ female inmates	Black and multi-racial inmates with substance dependence had higher rates of NSSI
Brooke et al. (2000)	United Kingdom	$N = 750$ male inmates on remand	More inmates with self-reported dependency had a history NSSI (33%) than those without reported substance use issues (21%)
Carli et al. (2010)	Italy	$N = 1,265$ incarcerated men; $n = 306$ high impulsivity group, $n = 285$ low impulsivity group	More inmates in the high-impulsivity group engaged in NSSI compared to the low impulsivity group. Risk for NSSI were increased by depression. Frequent childhood physical abuse was related to an increased the risk for NSSI
Chapman et al. (2005)	United States	$N = 105$ female inmates from a multi-level female prison	Patients with BPD had a higher prevalence of NSSI (73%) than those without BPD
Coid et al. (1992)	United Kingdom	$N = 74$ female remand inmates with a history of NSSI	69% of the sample were diagnosed with BPD and had higher BPD symptomology before engaging in NSSI. For 31% of the sample their acts of NSSI were precipitated by external factors
Dear (2008)	Australia	$N = 153$ prisoners; $n = 82$ with a reported incident of NSSI within prison, $n =$ with no history of NSSI matched for age, sex, race and custodial status (10% female)	Developed a model for NSSI in prison: interactions between individual vulnerabilities, vulnerabilities of the captive prison environment, severe distress and an inability to reduce distress lead to NSSI behavior
Fulwiler et al. (1997)	United States	$N = 31$ inmates admitted to a prison unit of a hospital for self-inflicted wounds; $n = 15$ had attempted suicide, $n = 16$ engaged in NSSI	NSSI was related to childhood hyperactivity and dysthymia/anxiety syndrome beginning in childhood or early adolescence
Haines & Williams (1997)	Australia	$N = 50$ males; $n = 19$ prisoners with a history of NSSI; $n = 13$ prisoners with no history of NSSI, $n = 18$ undergraduates with no history of NSSI or incarceration	NSSI group had significantly fewer cognitive coping resources and poorer problem solving skills. Specifically, more problem avoidance and less personal control in problem solving
Hillbrand et al. (1996)	United States	$N = 53$ records from patients in a maximum security forensic hospital who have engaged in: a single act ($n = 25$) or in two or more incidences ($n = 28$) of NSSI	Those with only one act had shorter hospital stays than those with repeated acts. Those with repeated acts showed more frequent verbal aggression and physical aggression towards objects and others
Hunter (1988)	Australia	$N = 100$ inmates in a lock-up with a high incidence of suicides and Aboriginal offenders (30% female)	While under the influence of alcohol 28% (21% of male and 43% of female) had impulses to engage in NSSI, 17% (13% of male and 27% of female) actually engaged in NSSI
Kirchner et al. (2008)	Spain	$N = 102$ male inmates from a young offenders unit	NSSI was most common among inmates with high avoidance and low approach coping styles. No inmates with both high approach and avoidance coping styles engaged in NSSI
Lohner & Konrad (2006)	Germany	$N = 49$ male inmates with a history of suicidal or NSSI behaviors.	NSSI is a distinct entity from suicide
Maden et al. (2000)	United Kingdom	$N = 1,752$ male offenders randomly selected from 17 prisons and 8 young offender facilities; $n = 1349$ adults, $n = 402$ young offenders	A history of NSSI was related to diagnoses of alcohol dependence and personality disorders. Inmates with longer sentences were more likely to engage in NSSI
Mannion (2009)	United Kingdom	$N = 57$ male patients in a high security psychiatric hospital for the dangerous and severely personality disordered	51% of the files had a diagnosis of BPD. Length of stay was positively correlated with using a pen as an NSSI tool and needing medical treatment for NSSI
Marzano et al. (2010)	United Kingdom	$N = 120$ female inmates; $n = 60$ near-lethal self-injury cases, $n = 60$ controls	NSSI cases had more current depression and comorbidity, as well as a history of suicide attempt
O'Brien et al. (2003)	United Kingdom	$N = 771$ female inmates	NSSI was more common among white (11%) than black (4%) females. More females with a psychotic disorder engaged in NSSI (about 33%) compared to females without a psychotic disorder (about 10%)
Rutherford & Taylor (2004)	United Kingdom	$N = 52$ female inmates transferred to an inpatient health service	Inmates with a personality disorder diagnosis had higher rates of NSSI than those without personality disorders
Vollm & Dolan (2009)	United Kingdom	$N = 638$ female inmates	NSSI is associated with depressive symptoms
Roe-Sepowitz (2007)	United States	$N = 256$ females from 5 prisons	NSSI is associated with suicide attempts, emotional abuse, sexual abuse, binging and vomiting behaviors, and impaired self-reference

(Continued on next page)

TABLE 3
Risk factors Related to NSSI in Offender Populations *(Continued)*

Study	Country	Sample	Findings
Smith et al. (2010)	United States	$N = 22{,}983$ inmates from the South Carolina Management Information Correction Notes System database for prison events from 28 prisons (7% female)	Inmates that engaged in NSSI were mostly white, single, slightly younger, more likely eligible for parole, imprisoned more years and less educated than inmates that didn't self-injure
Wilkins & Coid (1991)	United Kingdom	$N = 136$ females; $n = 74$ inmates, $n = 62$ controls	History of NSSI was related to high psychiatric morbidity, criminal history (serious, frequent and initiated at an early age) and impulse control issues

imprecise (e.g., "severe PD"; Rutherford & Taylor, 2004). In a study using more rigorous diagnostic assessments (structured clinical interviews), female inmates with a diagnosis of borderline personality disorder (BPD) had a higher prevalence of NSSI (73%) than those without a diagnosis of BPD (Chapman et al., 2005).

Coping and NSSI

Specific styles of coping have been associated with NSSI. Among non-offender populations, NSSI has been associated with avoidant coping, characterized by efforts to escape the stressor physically, mentally, or emotionally, rather than engage in approach-oriented problem solving (Chapman, Gratz, & Brown, 2006; Hasking, Momeni, & Swannell, 2008). Although minimal research has been conducted in this area among criminal populations, a similar pattern emerged. Prisoners who use more avoidance and less approach styles of coping were at greater risk of engaging in NSSI (Kirchner et al., 2008) Further, compared with prisoners and undergraduates with no history of NSSI, prisoners with a history of NSSI displayed significantly fewer cognitive coping resources and weaker problem-solving skills. Specifically, they demonstrated more problem avoidance and less personal control in problem-solving scenarios (Haines & Williams, 1997).

Interpersonal Conflicts and NSSI

Another risk factor associated with NSSI is relationship difficulties. Several studies suggest that interpersonal problems may serve as proximal risk factors for NSSI among non-offender populations (e.g., Brodsky, Groves, Oquendo, Mann, & Stanley, 2006; Welch & Linehan, 2002). Similarly, among offenders in a high-security hospital, the most common antecedent of NSSI was interpersonal conflict (42% of incidences; Mannion, 2009).

Negative Emotions and NSSI

A predisposition towards specific negative emotions also seems to lead to NSSI (e.g., Dear, 2008). Anger has been found to precipitate NSSI in non-offender samples (e.g., Brown et al., 2002; Herpertz, Sass, & Favazza, 1997; Simeon et al., 1992) as well as among female remanded prisoners (Wilkins & Coid, 1991). Moreover, forensic patients who had engaged in multiple instances of NSSI were more aggressive (according to staff ratings) and required longer hospitalization than forensic patients who had engaged in only one instance of NSSI (Hillbrand et al., 1996). Indeed, self-reported aggression was a unique predictor of NSSI among male inmates (Sakelliadis et al., 2010). Another emotion implicated in NSSI is shame. Offenders who engaged in NSSI or suicidal behavior reported significantly more shame than offenders who did not engage in any self-injurious behavior (Milligan & Andrews, 2005). Some different patterns emerge within offender and non-offender samples. In particular, among offenders, NSSI was associated with impulsivity but not sadness (Hillbrand et al., 1996), whereas in a non-offender sample, NSSI was linked with sadness, but not impulsivity (Apter, Kotler, & Sevy, 1991).

Childhood Maltreatment and NSSI

Traumatic experiences in childhood have also been linked with NSSI. Several studies have identified an association between a history of sexual or physical abuse and NSSI in offender and clinical populations (e.g. Carli et al., 2010; Coid, Wilkins, Coid, & Everitt, 1992; Shapiro, 1987; van der Kolk, Perry, & Herman, 1991; Wilkins & Coid, 1991; Zlotnick et al., 1996), although this association is relatively small (Klonsky & Moyer, 2008). Sexual abuse in particular has been associated with NSSI in offender samples (Roe-Sepowitz, 2007). Childhood trauma in general was linked with NSSI in one study of male inmates, but this relationship was not significant after accounting for psychopathology (Sakelliadis et al., 2010). The link between history of trauma and later psychopathology may not be direct. Rather, childhood experiences with trauma may influence psychological processes that later predispose individuals to psychopathology (e.g., Andrew, Brewin, Rose, & Kirk, 2000; Kent & Waller, 1999). One means by which childhood trauma may predispose individuals to engage in NSSI is by increasing shame (e.g., Feiring, Taska, & Lewis, 2002). Shame and shame towards the body have been found to mediate the relationship between childhood abuse and later NSSI or suicidality in offender

populations (Milligan & Andrews, 2005; see Table 3 for findings on risk factors for NSSI in offender populations). This model did not hold among non-offenders (Donhauser, 2008).

FUNCTIONS OF NSSI

Although many incidents of NSSI appear similar, they may serve a variety of distinct functions (Jeglic et al., 2005). Specifically, NSSI has been hypothesized to result in automatic (intrapersonal) or social (interpersonal) reinforcement (Nock & Prinstein, 2004). These functions can be further categorized as either positively or negatively reinforcing. It has been suggested that NSSI may be an over-determined behavior, in that it may serve various functions at any given time (Suyemoto, 1998). In order to successfully treat NSSI, it is important to assess the mechanisms maintaining the behavior.

Automatic Reinforcement

To regulate emotions

Across contexts, NSSI serves an emotion regulatory function. In the general population, relief of unwanted emotions is the primary function cited for engaging in NSSI (among community samples, Briere & Gil, 1998; females with BPD, Brown et al., 2002; Gardner & Gardner, 1975; adolescents, Nock & Prinstein, 2010). Findings indicative of the emotion regulation function of NSSI are echoed within criminal justice contexts. For instance, female offenders who self-injured recounted more positive emotional shifts following NSSI, compared with those who attempted suicide (Chapman & Dixon-Gordon, 2007). In qualitative studies, female prisoners described using NSSI to achieve emotional relief (Kenning et al., 2010; Mangnall & Yurkovich, 2010). Similarly, among male inmates, the most common motive associated with NSSI was emotional release (31.6%) and desire to release anger (21.1%; Sakelliades et al., 2010). Moreover, among male inmates diagnosed with personality disorders using a semi-structured measure, the most common motive for NSSI was emotion regulation (79%; Gallagher & Sheldon, 2010). Forensic patients with intellectual disabilities also named relief from unwanted emotions as the primary reason for NSSI (Duperouzel & Fish, 2010).

In further support of the emotion regulatory function of NSSI, findings suggest that negative emotions often precipitate NSSI (Snow, 2002). In particular, anger or aggression may be primary precipitants of NSSI in criminal justice settings; 72% of self-injuring female inmates exhibited anger or aggression within 24 hours prior to their NSSI episode. An investigation of the precipitants of NSSI compared to suicide attempts revealed that negative emotions, such as anger, trigger NSSI, whereas life stressors tended to precede suicide attempts (Miller & Fritzon, 2007; Snow, 2002). Anger was also the most frequent emotional precipitant of NSSI reported by female offenders (Chapman & Dixon-Gordon, 2007). Similarly, among male offenders in a high security psychiatric hospital, 31% of NSSI incidences were precipitated by feelings of anger, hopelessness, and guilt (Mannion, 2009). These findings, however, were based on retrospective self-report. It is important to note that reported motives for engaging in NSSI may be distinct from contingencies which function to maintain NSSI over time.

Although the mechanisms which reinforce and thereby maintain NSSI remain unclear, preliminary evidence suggests that NSSI may downregulate arousal. In one of the first laboratory studies examining the mechanisms that maintain NSSI in offender samples, prisoners with a history of NSSI exhibited a decrease in physiological arousal in response to imagined NSSI, whereas incarcerated and community non-NSSI controls did not exhibit a reduction in arousal (Haines, Williams, Brain, & Wilson, 1995).

Taken together, these studies suggest that NSSI may primarily serve to relieve emotional distress, particularly anger, in both criminal justice and community contexts (Klonsky, 2007). If the same function is at play in both settings, what might account for the high prevalence of NSSI in correctional settings? Perhaps the heightened rate of NSSI among offenders is attributable to the stress of imprisonment (Paulus & Dzindolet, 1993). It has been suggested that inmates use NSSI as a form of "environmental coping" to handle unbearable emotions in the face of the powerlessness associated with incarceration (Dockley, 2001).

To punish themselves

Although many individuals endorse engaging in NSSI for emotion regulatory purposes, it is unclear why people use NSSI rather than another strategy to escape aversive emotions. One possibility is that NSSI may be ego-syntonic for individuals who feel negatively towards themselves (Klonsky, 2008). Researchers hypothesized that being raised in an invalidating environment (e.g., Linehan, 1993) may contribute to the reported self-directed anger and self-derogation among individuals who engage in NSSI (e.g., Herpertz et al., 1997; Klonsky et al., 2003). Indeed, many researchers (e.g., Liebowitz, 1987) view NSSI as inward-directed anger, which may account for why anger is so often a precipitant of NSSI.

Findings regarding the prominence of the self-punishment function of NSSI are mixed. Several studies among non-offender samples provided strong support for the self-punishment function of NSSI (among females with BPD, Brown et al., 2002; inpatients, Herpertz, 1995; and adolescents, Laye-Gindhu & Schonert-Reichl, 2005; Nock & Prinstein, 2004). Self-punishment plays a role in NSSI within correctional settings as well. Out of 50 female inmates, 15 indicated that NSSI was a way of punishing or blaming themselves (Miller & Fritzon, 2007).

This discrepancy in the reported incidences of self-punishment as a function of NSSI was clarified by Klonsky (2007). He conducted a study asking participants to identify

reasons for NSSI as "primary," "secondary," or "not relevant." Although emotion regulation reasons were cited as "primary" most often, self-punishment was elected as a "secondary" reason for NSSI. Thus, permitting participants to rank order motives may provide an explanation for the disparate findings regarding the importance of the self-punishment function of NSSI.

Social Reinforcement

Traditionally, NSSI within correctional settings has been regarded as "manipulative." Any NSSI functioning to influence the environment, attract attention, or achieve some other goal has been considered manipulative (Dear, Thomson, & Hills, 2000). Several studies support this notion, (e.g. DeHart, Smith, & Kaminski, 2009; Franklin, 1988; Pattison & Kahan, 1983), with manipulative acts of NSSI accounting for up to half of all NSSI in correctional contexts. These studies, however, used non-traditional means for operationalizing "manipulative" motives, such as if participants noted any reason other than suicide (Franklin, 1988).

This methodological issue aside, there is some merit to the notion that offender populations may engage in NSSI for more interpersonal, communicative functions, compared with community populations. Although emotional relief and escape were the most common reasons for NSSI in a study of 81 inmates, manipulation was coded as the third most common reason (24% of reasons coded) for a recent incident of NSSI (Dear et al., 2000). Similarly, among male inmates diagnosed with a personality disorder (using a semi-structured interview), interpersonal influence was the third most common reported motive for NSSI, with 41% of the participants endorsing this motive (Gallagher & Sheldon, 2010). More indirectly, 28% of a sample of female special hospital patients was known to desire a change in location, housing, or another environmental change just prior to their NSSI episode, and 26% of the sample made threats prior to NSSI, suggesting some communicative intent (Miller & Fritzon, 2007). The interpersonal influence function was reported significantly more often in offender samples than in community samples (Holmqvist, Carlberg, & Hellgren, 2008; see Table 4 for findings on the functions of NSSI).

TABLE 4
Functions of NSSI in Offender Populations

Study	Country	Sample	Findings
Borrill et al. (2005)	United Kingdom	$N = 15$ female inmates who engage in potentially lethal acts of NSSI in prison	Main function of NSSI is emotion regulation
Chapman & Dixon-Gordon (2007)	Canada	$N = 105$ female inmates	Offenders who engaged in NSSI recounted more positive emotional shifts following NSSI, compared with those who attempted suicide
Dear et al. (2000)	Australia	$N = 81$ inmates interviewed 3 days following an NSSI incident (14% female)	Researchers coded 43% of inmates motives for NSSI as psychological relief, 32% as escape and 24% as manipulative
Duperouzel & Fish (2010)	United Kingdom	$N = 9$ patients in secure forensic services with mild to moderate intellectual disability who currently engage in NSSI	Main reason for NSSI was relief from emotions. Many experienced shame and guilt post-NSSI act. Staff often dealt with NSSI by increasing observation of the patient, this made patients feel punished
Franklin (1988)	United States	$N = 284$ adult male offenders discharged from a mental health treatment facility in the prison; $n = 64$ were referred for self-injury (both non-suicidal and suicidal).	Half self-injured to achieve a goal other than self-injury (labeled as manipulative), 27% did not give a reason and 23% self-injured with suicidal intent
Gallagher & Sheldon (2010)	United Kingdom	$N = 29$ male inmates with personality disorders	The most common motive for NSSI was emotion regulation (79%), followed by expression of aggression (48%), and interpersonal influence (41%)
Haines et al. (1995)	Australia	$N = 38$ men; $n = 15$ maximum security inmates who engage in NSSI, $n = 11$ no-NSSI maximum security controls, $n = 12$ non-inmate controls (undergraduates with no history of incarceration or NSSI)	In response to imagined NSSI episodes, Inmates that engaged in NSSI exhibited a decrease in physiological arousal
Kenning et al. (2010)	United Kingdom	$N = 15$ prison staff (60% female), 15 female inmates	Inmates viewed NSSI as holding a function of emotional relief. Staff viewed it as manipulative
Mangnall & Yurkovich (2010)	United States	$N = 8$ female inmates	Qualitative responses revealed that female inmates used NSSI for emotion regulation purposes
Sakelliadis (2010)	Greece	$N = 173$ male inmates	The most common motives were emotional release (32%) and anger release (21%)
Snow (2002)	United Kingdom	$N = 143$ inmates from 10 prisons who had engaged in NSSI or suicide attempt	Those that engaged in NSSI were more likely to describe negative feelings as precipitating factors compared to those with a history of suicide attempt

ASSESSMENT

The high prevalence of NSSI in criminal justice settings has led researchers to suggest that all inmates undergo screening for urges to engage in NSSI and suicidal behavior upon admission to correctional facilities (Ivanoff & Hayes, 2001). In a U.S. national survey, 82.6% of respondents had some intake assessment procedure (Smith & Kaminski, 2011). Although instruments have been developed for screening inmates for risk of suicide (e.g., Zapf, 2006), there is no standardized assessment measure with which to determine risk for NSSI. Furthermore, the base rates of NSSI and risk factors for NSSI vary by context, further complicating the construction of assessment measures.

The U.K.'s National Institute for Clinical Excellence (NICE, July 2004) set out clinical guidelines for management of NSSI, suggesting providers conduct an assessment of needs. The Camberwell Assessment of Need (Phelan et al., 1995) assesses clinical and social needs, with good inter-rater ($r = .98$ to .99) and test-retest ($r = .71$ to .78) reliability. Although this instrument broadly assesses mental health and social history, it does not address factors specific to risk for NSSI and suicide. Therefore, more specific assessment of risk must be conducted.

A risk assessment should address several factors related to NSSI and suicide. It is important to assess the form and function of NSSI (Walsh, 2007). Self-report measures include the Deliberate Self-harm Inventory (Gratz, 2001), which assesses topography of NSSI history, and the Inventory for Self-Statements about Self-Injury (Klonsky & Glenn, 2009) and Functional Assessment of Self-Mutilation (Lloyd, Kelley, & Hope, 1997), which assess motives for NSSI. Both the Suicide Attempt Self-Injury Interview (Linehan, Comtois, Brown, Heard, & Wagner, 2006) and the Self-Injurious thoughts and Behavior Interview (Nock, Holmberg, Photos, & Michel, 2007) provide comprehensive assessment of NSSI and suicide attempts. Although these have strong psychometric properties, the clinical applications have not yet been well-studied.

In terms of risk factors of NSSI, past and present mental health treatment, history of suicide attempts and self-injury, family history of suicide, recent significant life events, and present suicide ideation and planning have also been suggested as important items to assess at intake (Ivanoff & Hayes, 2001). These factors are contained in the Suicide Assessment Manual for Inmates (SAMI; Zapf, 2006), a comprehensive suicide risk assessment tool which may be useful as a supplementary tool when faced with inmates who self-injure. Depression and hopelessness have been found to adequately predict NSSI in a sample of offenders (Perry & Gilbody, 2009), but this was not examined within forensic patient samples. Risk assessment measures specific to NSSI, however, remain lacking. Another promising screening instrument is the Suicide Concerns for Offenders in Prison Environment (SCOPE), which assesses optimism and protective self-worth, although the predictive value has not yet been evaluated (Perry & Olason, 2009). One study also found that the Dynamic Appraisal of Situational Aggression (DASA) and the Historical-Clinical Risk Management - 20 (HCR-20) reliably predicted imminent risk for aggressive behavior and NSSI, despite the fact that these tools were not developed to specifically predict NSSI behavior. This said, the researchers' definition of self-injury was unclear: "superficial scratching to serious self-mutilation" (p. 139) and may have included suicidality (Daffern & Howells, 2007; see Table 5 for assessments of NSSI). Regardless of assessment tool, ongoing assessment is crucial for at-risk individuals.

TREATMENT OF NSSI

Despite the burden of NSSI in correctional and non-correctional settings, there are currently no efficacious treatments for NSSI. Furthermore, the treatments that show promise for reducing NSSI are not widely implemented. Only a third of jails in the United States have mandatory suicide prevention policies (Ivanoff & Hayes, 2001). Although

TABLE 5
Assessment of NSSI in Offender Populations

Study	Country	Sample	Findings
Daffern & Howells (2007)	United Kingdom	$N = 40$ patients in a dangerous personality disorder unit of a forensic hospital	Both the Dynamic Appraisal of Situational Aggression and the Historical-Clinical Risk Management (HCR-20) reliably predicted imminent risk of self-injury
Gray et al. (2003)	Wales	$N = 34$ offenders with mental illness (23% female)	HCR-20 was predictive of outward aggression, but not NSSI. The Psychopathic Check-list (PCL-R) predicted all forms of aggression (including self-injury) to a moderate level
Perry & Gilbody (2009)	United Kingdom	$N = 1{,}165$ offenders (39.9% female)	Using empirically-derived cut-offs, measures of depression and hopelessness predict suicide and NSSI adequately (sensitivity: 54.6–80%, specificity: 62.2-69.4%)
Perry & Olason (2009)	United Kingdom	$N = 1{,}166$ offenders (60% female)	The Suicide Concerns of Offenders in Prison Environment was developed, which is associated with history of NSSI and suicide

nearly 80% of prisons in the United States have a suicide prevention policy, only 15% of prisons meet clinical recommendations for the scope of these policies. Further complicating the situation, interviews with prison staff and inmates revealed discordance between staff beliefs about proper NSSI treatments and the intervention inmates want. Staff suggest therapeutic interventions and inmates just want to be able to talk to someone who will understand them (Douglas & Plugge, 2008).

Therapeutic Seclusion and Restraint

For individuals who have been identified as having imminent risk for NSSI or suicide, correctional officers often respond with therapeutic seclusion and restraint. In a survey of staff at correctional facilities, 80.8% of respondents indicated that NSSI prevention procedures included seclusion or monitoring (Marzano & Adler, 2007). Self-injury and threat of self-injury are the fourth and fifth most common reasons for special observation in correctional and community settings (Whitehead & Mason, 2006), and a history of NSSI and NSSI-related thoughts comprised five of the nine reasons articulated for placing individuals under special observation (Kettles, Moir, Woods, Porter, & Sutherland, 2004). Further, suicidal threat and NSSI led to 27.4% of all cases of seclusion practice in a Canadian secure psychiatric hospital (Ahmed & Lepnurn, 2001). Also, those placed in 'strip' cells, solitary confinement cells where inmates are stripped of their clothing and belongings, were more likely to have histories of NSSI than those who had never been placed in strip cells (Coid et al., 2003).

The evidence for therapeutic seclusion or restraints is mixed. The use of restraints has only been found to be effective in reducing NSSI among individuals with developmental disabilities (Oliver, Hall, Hales, Murphy, & Watts, 1998). However, administrative segregation of inmates shortened periods of NSSI abstinence by 17 months (Lanes, 2009). Further, in the wake of NSSI episodes, female inmates reported that segregation resulted in increased suicidal thoughts (Heney, 2007). Together, lack of empirical support for hospitalization and the potential for an escape from daily stressors to reinforce NSSI behaviors led Linehan (1993) to encourage hospitalization only as a last resort for treatment of NSSI.

In addition to the questionable effectiveness of restraint in reducing NSSI, the use of restraints and therapeutic seclusion presents an increased demand on correctional officers. According to national standards and practices (cf. Ivanoff & Hayes, 2001), inmates undergoing restraint or therapeutic seclusion must be monitored at least every 15 minutes. Further, some patients may require "constant observation," which requires more intensive supervision. Thus, this strategy may not be ideal for managing risk for NSSI or suicide in correctional settings.

Pharmacological Treatment

Medications are commonly used in correctional settings to treat individuals with histories of suicidal behaviors or NSSI (Ivanoff & Hayes, 2001). The most commonly prescribed medications for this population include antipsychotics (Hillbrand et al., 1996), selective serotonin reuptake inhibitors, and mood stabilizers (Conacher, 1997). Although some have suggested that it is important to treat underlying conditions to reduce NSSI (Ivanoff & Hayes, 2001), results from a meta-analysis suggest that treatment of depression with antidepressants had no impact on suicidal behavior (Beasley et al., 1992). These pharmacological studies are complicated, however, by ethical limitations regarding research on actively suicidal individuals (Ivanoff & Hayes, 2001). Providers should approach pharmacological interventions with caution, given the lack of evidence supporting the use of medication for NSSI or suicide risk.

Psychological Interventions

Few existing interventions for NSSI have garnered substantial empirical support. Indeed, few treatments have been developed to specifically target NSSI. In a review of interventions for NSSI, five randomized controlled trials (RCTs) yielded a decrease, albeit non-significant, in NSSI, (Hawton et al., 1998). Many of these studies, however, had small sample sizes, reducing the likelihood of detecting differences following treatment (Comtois, 2002; Hawton et al., 1998).

For treatment of NSSI among young offenders, a program called 'Access' was developed in the U.K., which incorporated physical activity and targeted self-esteem, hopelessness, locus of control, and externalizing behaviors including NSSI. Although the staff reported reduced NSSI behavior following treatment, the small sample size ($N = 16$) and absence of comparison group suggests these findings should be considered preliminary (Welfare & Mitchell, 2005).

Problem-solving therapy (PST) has been used to treat suicidality and NSSI. PST is based on the premise that the problem-solving deficits seen among those that self-injure are the reason these individuals turn to NSSI (D'Zurilla & Nezu, 2001). Findings regarding the efficacy of PST are mixed; some studies demonstrated a decrease in suicidal behaviors, compared with treatment as usual (e.g., McLeavey, Daly, Ludgate, & Murray, 1994), and other studies (e.g., Hawton et al., 1987) found no difference between groups. These studies included NSSI within a broader definition of suicidal behaviors, making it impossible to assess the distinct effect on NSSI.

Manual-assisted cognitive behavioral therapy incorporates problem-solving techniques, cognitive restructuring, and emotion regulation skills, for the treatment of NSSI (MACT; Evans, 2000). After six sessions, recipients of MACT exhibited less NSSI compared with treatment as usual, evident even with a small sample size. In a larger study,

the MACT group demonstrated non-significantly lower rates of NSSI compared with treatment as usual (Tryer et al., 2004).

Perhaps because NSSI is not specified as a mental health disorder within the DSM (APA, 2001), except as a criterion of BPD, the only well-established treatment of NSSI is within the context of BPD. Specifically, Dialectical Behavior Therapy (DBT; Linehan, 1993) has led to significant reductions in NSSI and suicidal ideation within BPD populations (Koons et al., 2001; Linehan, 2000). DBT involves multiple modes of intervention, including weekly skills training in mindfulness, interpersonal effectiveness, emotion regulation skills, and distress tolerance, in addition to individual therapy. Therefore, DBT is a comprehensive, resource-intensive treatment.

In recent years, DBT has been implemented within correctional settings, with some success. The effectiveness of DBT was examined within female (Low et al., 2001) and male inmates (Evershed et al., 2003). The average effect size for these treatments was .78 (Duncan, Nicol, Ager, & Dalgleish, 2006), which is lower than the effect size for other interventions in criminal justice settings, such as for problem solving (.93), and anger management (1.30). This difference in effect sizes may point to the intractable nature of NSSI. The DBT-based abbreviated Real Understanding of Self-Help program was developed for use among forensic samples in Australia, although there is not yet an empirical basis for this program or its efficacy in addressing NSSI (Eccleston & Sorbello, 2002).

Developed in response to a need for briefer interventions for NSSI, Emotion Regulation Group Therapy (ERGT) is a 14-week, emotion-focused behavioral adjunctive group treatment for patients with BPD and co-occurring NSSI (Gratz & Gunderson, 2006). Drawing from DBT and Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999), ERGT emphasizes the consequences of avoiding unwanted emotions and focuses on teaching emotion regulation, and reducing experiential avoidance and NSSI behaviors. A preliminary study ($N = 22$) revealed promising findings, with recipients of ERGT demonstrating significant post-treatment reduction of BPD symptoms and NSSI. The treatment as usual group did not yield any of these benefits. A follow-up study ($N = 23$) revealed a similar pattern of findings, with recipients of ERGT exhibiting significant reductions in BPD symptoms and NSSI. To date, there are no data on the efficacy of ERGT for offenders (see Table 6 for treatments for NSSI).

Complicating Factors

Treatment of individuals who engage in NSSI may be complicated by the difficulty such behavior presents for treatment providers. Criminal justice settings differ from clinical settings in that the individuals on the front lines may have less training in dealing with mental health issues (Ivanoff & Hayes, 2001; Short et al., 2009). Perhaps due to this lack of training, correctional staff often regard NSSI as manipulative (DeHart et al., 2009; Dickinson, Wright, & Harrison, 2009; Fish, 2000; Haycock, 1989; Kenning et al., 2010). One study found that most prison staff resented offenders they believed to engage in NSSI for manipulation and viewed these offenders as less in need of help and support (Short et al., 2009). Belief that NSSI is used as a tool for manipulation may contribute to the view that NSSI is unrelated to suicide risk (Dickinson et al., 2009; Snow, 1997). This view stands in stark contrast to the finding that a history of NSSI is the most robust predictor of suicide (Joiner et al., 2005). In addition, prison staff tended to attribute NSSI to individual differences, rather than situational demands (Kenning et al., 2010). Furthermore, although many prison officers espoused understanding views of NSSI, the second most strongly held belief was that harsh punishment was an appropriate response to NSSI (Ireland & Quinn, 2007). The high stress in correctional settings may also impede provision of treatment. Mental health workers in correctional settings experience more stress than their peers in clinical settings (Robinson & Kettles, 1998). This stress is likely exacerbated by the high rates of aggression and assault on staff by offenders with a history of NSSI or suicidality (Young, Justice, & Erdberg, 2006). Although the majority of staff surveyed reported having support in the treatment of NSSI, only half of the staff characterized the quality of support as representing "best practice" (Marzano & Adler, 2007). Further, despite the development of guidelines (e.g., Gough, 2005) and handbooks (e.g., Pengelly, Ford, Blenkiron, & Reilly, 2008) to help staff understand and manage NSSI, it is unknown whether these are frequently implemented.

DISCUSSION

The rates of NSSI in criminal justice settings (e.g., Brooker et al., 2002) are higher than that of the general adult population (e.g., Brier & Gil, 1998). Despite the prevalence of this costly and dangerous phenomenon, research and intervention efforts have been hindered by definitional obscurities surrounding self-injurious behaviors. The present review sought to integrate existing research on NSSI within correctional contexts.

Although NSSI in correctional settings was seen historically as serving the function of influencing the environment (e.g., Franklin, 1988), more recent research mitigates this view. Indeed, it appears that NSSI serves similar functions in correctional and non-correctional context (Klonsky, 2007), primarily to regulate emotions (e.g., Chapman & Dixon-Gordon, 2007). There is some evidence, however, of higher rates of NSSI in the service of influencing the environment in correctional settings (Holmqvist et al., 2008) compared with community settings. This may reflect the limited avenues by which incarcerated individuals can impact their

TABLE 6
Treatment of NSSI in Offender Populations

Study	Country	Sample	Findings
Ahmed & Lepnurm (2001)	Canada	$N = 183$ patients placed in seclusion at a psychiatric hospital between August 1996–Februray 1999 (60% female)	Suicidal threats and NSSI accounted for 27.4% of seclusion cases
Coid et al. (2003)	United Kingdom	$N = 3{,}142$ inmates from 131 correctional institutes (4% female)	11% of the sample were placed in special cells. Those placed in special cells were more likely to have a history of NSSI and suicide attempt and substance abuse compared to those not placed in special cells
DeHart et al. (2009)	United States	$N = 54$ correctional mental health professionals from 14 facilities (67% female)	The most common intervention was isolation
Dickinson et al. (2009)	United Kingdom	$N = 60$ registered nurses and nursing aids in youth forensic units	23% of staff showed antipathy towards those that engaged in NSSI, 75% said they needed more education on NSSI, 67% labeled patients and 25% were unaware of the association between NSSI and risk of suicide
Douglas & Plugge (2008)	United Kingdom	$N = 59$; $n = 27$ female young inmates, $n = 23$ prison professionals, $n = 9$ Primary Care Trust and Youth Offending Team officials	Staff called for more therapeutic interventions to deal with NSSI and inmates wanted someone to understand and listen to them
Evershed et al. (2003)	United Kingdom	$N = 17$ male patients with personality disorders; $n = 8$ forensic patients received DBT, $n = 9$ patients from other wards (matched on BPD characteristics) received treatment as usual	The DBT group remained stable or improved on anger and hostility cognition and management. The comparison group exhibited deterioration on the same scales
Fish (2000)	United Kingdom	$N = 9$ direct care staff of a medium security learning disability service who have worked directly with patients who engage in NSSI	When treating NSSI staff experienced feelings of failure, guilt and loss of confidence. Staff strategies for dealing with NSSI were focusing on positive attributes of the patient. Staff attributed NSSI to being a part of the client's nature, an attempt at gaining control, a coping mechanism or an act of rebellion against the system
Gough & Hawkins (2000)	United Kingdom	$N = 70$ staff members of a forensic psychiatric service	Each staff member had worked with an average of 15 patients that engaged in NSSI and only had 1 training session on NSSI. Staff rated their understanding of NSSI as 44%. Understanding increased with training
Gough (2005)	United Kingdom	Results from Gough & Hawkins (2000)	12 Guidelines were suggested for forensic psychiatric service staff for dealing with NSSI
Heney (2007)	Canada	$N = 85$; $n = 44$ female inmates, $n = 41$ members of security	97% of inmates that engaged in NSSI said segregation was an inappropriate response after NSSI, they perceived it as a punishment; 78% of inmates said females who engage in NSSI need to talk to someone after. The majority said they want to self-injure in situations of helplessness, powerlessness, or isolation
Ireland & Quinn (2007)	United Kingdom	$N = 162$ prison officers in training (38.27% female)	The second most common belief was that harsh punishment was the most appropriate response to NSSI
Kettles et al. (2004)	United Kingdom	$N = 980$ patients from 5 acute clinical areas and one forensic clinical area of a psychiatric hospital (55% female)	History of NSSI-related thoughts and behaviors accounted for five of the nine main reasons for placing individuals under special observation
Lanes (2009)	United States	$N = 264$ archived cases of male inmates; $n = 132$ non-NSSI cases (referred to treatment), $n = 132$ NSSI cases (matched for time served and custody level)	When placed in administrative segregation periods of remission from NSSI were reduced by a median of 17 months
Marzano & Adler (2007)	United Kingdom	$N = 54$ prison staff	Most staff identified some support services were in place (90.7%), but 55.6% classified the staff support services as constituting "best practice"
Melzer et al. (2004)	United Kingdom	$N = 391$ admission assessments of patients referred to 34 medium security psychiatric care units (17% female admitted)	Prisoners were more likely to be assessed as needing medium security if they had a history of NSSI
Welfare & Mitchell (2005)	United Kingdom	$N = 16$ high risk juvenile offenders accepted to be part of the Access Program	NSSI behavior was reduced following the program, but there was no comparison group
Whitehead & Mason (2006)	United Kingdom	$N = 90$; $n = 60$ nursing staff, $n = 30$ primary nurses working on a medium secure forensic psychiatric unit; a low secure forensic psychiatric unit and a non-forensic unit in a general psychiatric hospital	Self-injury and threat of self-injury are the fourth and fifth most common reasons for special observation in both correctional and community settings

surroundings. It is crucial to clarify the functions of NSSI on an idiographic basis to tailor treatment interventions.

Although extant research has identified risk factors of NSSI in clinical and community populations, these risk factors are inflated among offender populations. Psychopathology (James & Graze, 2006) and childhood victimization (Browne, Miller, & Maguin, 1999), for example, are much higher in offender samples than in community samples. This difference in base rates of risk factors, in turn, makes distinguishing individuals at risk for NSSI even more difficult. For instance, the presence of an Axis I disorder conveys increased risk for NSSI in the community (e.g., Zlotnick et al., 1999), but may not be robust predictors of recurrent NSSI in correctional settings (e.g., Hillbrand et al., 1996). Thus, further attention must be given to the development of effective instruments for the prediction of NSSI. At present, there are no measures specifically developed for the assessment of risk of NSSI, although there are several instruments that capture related constructs. With emotion regulation emerging as the predominant function of NSSI across settings, a lack of strategies for managing distress may be a potential risk factor. Moreover, given the difference in base rates of NSSI in correctional settings compared with other settings, assessment instruments should be validated for use in correctional settings.

Treatment of NSSI is a burgeoning area of research. Currently, treatment is often administered on a case-by-case basis (Ivanoff & Hayes, 2001), and typically involves special hospitalization or restricted environments (e.g., Whitehead & Mason, 2006), although there is little evidence for the effectiveness of these approaches. The most promising treatment to date is DBT (Linehan, 1993). Although this is the most empirically-supported intervention for NSSI (albeit within a BPD population), it has only limited support among offender populations at present. Further, DBT is a comprehensive treatment package, and it may not be feasible to implement DBT programs in all correctional facilities. Interventions have been developed, however, which deliver similar skills within refined, more short-term treatment packages (ERGT; Gratz & Gunderson, 2006). Research should be geared towards developing and testing more efficient treatment packages for use with correctional samples.

Finally, correctional staff are faced with far more difficulties than mental health providers in community and clinical settings. When staff members of a forensic psychiatric service were asked to rate their understanding of NSSI behavior on a visual analogue scale, their average rating was 44%. Fortunately ratings of understanding increased with more training on NSSI (Gough & Hawkins, 2000). This state of affairs has led researchers to suggest more comprehensive training for professionals in correctional settings (e.g., Ivanoff & Hayes, 2001). Ideally, this training should involve signs of imminent risk, a description of prevention and response procedures, basic first aid training, and an overview of research to avert misconceptions regarding NSSI, and thereby enhance awareness of the seriousness of NSSI.

Several aspects of the existing research on NSSI warrant consideration. First, many studies were excluded from the current review due to a lack of distinction between NSSI and suicidal self-injury. Although the exclusive focus on NSSI in the current review permitted an examination of correlates of "pure" NSSI in correctional settings, it also limited the amount of information on this phenomenon. Second, many studies derived clinical diagnoses from file review, potentially leading to bias. For instance, given that NSSI is a hallmark of BPD, it is possible that BPD diagnoses are inappropriately applied to individuals who engage in NSSI. Further, most existing research is cross-sectional, which hinders any interpretation of the relationship between risk factors and NSSI over time. Similarly, the retrospective self-report used in most studies may lead to inaccurate reports of early childhood experiences, and antecedents of NSSI episodes. Thus, many of the findings from extant research are mixed, resulting in an inconclusive synthesis of the literature. Further, these limitations present barriers for the clear identification of specific risk factors, and implementation of brief and effective treatments for NSSI within correctional contexts.

The limitations to the existing literature base on NSSI in correctional contexts suggest several steps for future research. First, given that NSSI and suicidal behaviors are related but functionally distinct behaviors, future studies should ensure to explicitly assess suicidal self-injury apart from NSSI, in addition to providing explicit definitions for NSSI. Second, in order to counter the potential for bias in using file diagnoses, future studies should examine the clinical correlates of NSSI using empirically validated diagnostic assessment. Third, the existing cross-sectional studies have yielded mixed findings regarding the risk factors for NSSI. Thus, the field of NSSI research would benefit from longitudinal studies of engagement in NSSI and desistance of NSSI over time, allowing for an examination of the interaction of both risk and protective factors. Fourth, laboratory studies examining mechanisms underlying NSSI could paint a better picture of why this behavior is so persistent among some samples, but not others. Fifth, the impact of education efforts to enhance staff knowledge of NSSI on identification and treatment of NSSI should be examined. Finally, future research should be directed to refining and examining the effectiveness of brief interventions for NSSI within correctional settings.

In recent years, research on NSSI has overcome several hurdles. Researchers are converging on an explicit terminology for self-injurious behaviors. The functions of NSSI are coming to light as distinct from other forms of self-damaging behaviors, which gives rise to better ways of changing these behaviors. Further, there is a growing body of research on the correlates of NSSI. This progress gives us the foundation to take several important steps. Standardized risk assessments must be developed to assess risk for NSSI and these tools must take into account the various settings within which

these behaviors occur. Specific ingredients of effective psychological interventions must be identified, with the aim of feasibly implementing these programs in a standard fashion across correctional facilities. The most essential step, however, is to better inform the staff working with individuals at risk for NSSI and suicide, and to provide them with adequate resources in order to help manage this devastating behavior.

REFERENCES

Ahmed, A. G., & Lepnurm, M. (2001). Seclusion practice in a Canadian forensic psychiatric hospital. *The American Academy of Psychiatry and Law*, *29*, 303–309.

Almasi, K., Belso, N., Kapur, N., Webb, R., Cooper, J., Hadley, S., ... Appleby, L. (2009). Risk factors for suicide in Hungary: a case-control study. *BMC Psychiatry*, *9*. n.p. doi:10.1186/1471-244X-9-45

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders, 4th edition, text revision (DSM-IV-TR)*. Washington, DC: American Psychiatric Press.

Apter, A., Kotler, M., & Sevy, S. (1991). Correlates of risk of suicide in violent and nonviolent psychiatric patients. *American Journal of Psychiatry*, *148*, 883–887.

Beasley, C. M., Jr., Dornseif, B. E., Bosomworth, J. C., Sayler, M. E., Rampey, A. H., Jr., Heiligenstein, J. H., ... Masica, D. N. (1992). Fluoxetine and suicide: A meta-analysis of controlled trials of treatment for depression. *British Medical Journal*, *303*, 685–692. doi:10.1136/bmj.303.6804.685

Bille-Brahe, U., Jessen, G., Nielsen, E., Nielsen, A. S., & Schiødt, H. (1994). Attempted suicide in a Danish region 1989-1992. In A. J. F. M. Kerkhof, A. Schmidtke, U. Bille-Brahe, D. de Leo, & J. Lonnqvist (Eds.), *Attempted suicide in Europe* (pp. 35–51). Leiden/Copenhagen: DSWO Press.

Bland, J., Mezey, G., & Dolan, B. (1999). Special women, special needs: A descriptive study of female special hospital patients. *Journal of Forensic Psychiatry*, *10*, 34–45. doi:10.1080/09585189908402137

Borrill, J. (2002). Self-inflicted deaths of prisoners serving life sentences 1988-2001. *The British Journal of Forensic Practice*, *4*, 30–38. doi:10.1108/14636646200200024

Borrill, J., Burnett, R., Atkins, R., Miller, S., Briggs, D., Weaver, T., & Maden, A. (2003). Patterns of self-harm and attempted suicide among white and black/mixed race female prisoners. *Criminal Behaviour and Mental Health*, *13*, 229–240. doi:10.1002/cbm.549

Borrill, J., Snow, L., Medlicott, D., Teers, R., & Paton, J. (2005). Learning from 'near misses': Interviews with women who survived an incident of severe self-harm in prison. *The Howard Journal*, *44*, 57–69. doi:10.1111/j.1468-2311.2005.00355.x

Briere, J., & Gil, E. (1998). Self-mutilation in clinical and general population samples: Prevalence, correlates, and functions. *American Journal of Orthopsychiatry, 68*, 609–620. doi:10.1037/h0080369

Brodsky, B. S., Groves, S. A., Oquendo, M. A., Mann, J. J., & Stanley, B. (2006). Interpersonal precipitants and suicide attempts in borderline personality disorder. *Suicide and Life Threatening Behaviors*, *36*, 313–322. doi:10.1521/suli.2006.36.3.313

Brooke, D., Taylor, C., Gunn, J., & Maden, A. (2000). Substance misuse as a marker of vulnerability among male prisoners on remand. *The British Journal of Psychiatry*, *177*, 248–251. doi:10.1192/bjp.177.3.248

Brooker, C., Repper, J., Beverley, C., Ferriter, M., & Brewer, N. (2002). *Mental health services and prisoners: A review*. Sheffield, UK: Mental Health Task Force.

Brown, M. Z., Comtois, K. A., & Linehan, M. M. (2002). Reasons for suicide attempts and nonsuicidal self-injury in women with borderline personality disorder. *Journal of Abnormal Psychology*, *111*, 198–202. doi:10.1037/0021-843X.111.1.198

Browne, A., Miller, B., & Maguin, E. (1999). Prevalence and severity of lifetime physical and sexual victimization among incarcerated women. *International Journal of Law and Psychiatry*, *22*, 301–322. doi:10.1016/S0160-2527(99)00011-4

Carli, V., Jovanović, N., Podlesek, A., Rihmer, Z., Maggi, S., Marusic D., ... Sarchiapone, M. (2010). The role of impulsivity in self-mutilators, suicide ideators and suicide attempters-A study of 1265 male incarcerated individuals. *Journal of Affective Disorders*, *123*, 116–122. doi:10.1016/j.jad.2010.02.119

Chapman, A. L., & Dixon-Gordon, K. L. (2007). Emotional antecedents and consequences of deliberate self-harm and suicide attempts. *Suicide & Life Threatening Behavior*, *37*, 543–552. doi:10.1521/suli.2007.37.5.543

Chapman, A. L., Gratz, K. L., & Brown, M. (2006). Solving the puzzle of deliberate self-injury: The experiential avoidance model. *Behaviour Research and Therapy*, *44*, 371–394.

Chapman, A., Specht, M. W., & Cellucci, T. (2005). Borderline personality disorder and deliberate self-harm: Does experiential avoidance play a role? *Suicide and Life-Threatening Behavior*, *35*, 388–399. doi:10.1521/suli.2005.35.4.388

Coid, J., Petruckevitch, A., Bebbington, P., Jenkins, R., Brugha, T., Lewis, G., ... Singleton, N. (2003). Psychiatric morbidity in prisoners and solitary confinement, II: Special ('strip') cells. *Journal of Forensic Psychiatry and Psychology*, *14*, 320–340. doi:10.1080/1478994031000095501

Coid, J., Wilkins, J., Coid, B., & Everitt, B. (1992). Self-mutilation in female remanded prisoners II. A cluster analytic approach towards identification of a behavioural syndrome. *Criminal Behaviour and Mental Health*, *2*, 1–14.

Comtois, K. A. (2002). A review of interventions to reduce the prevalence of parasuicide. *Psychiatric Services*, *53*, 1138–1144. doi:10.1176/appi.ps.53.9.1138

Conacher, G. N. (1997). Pharmacological approaches to impulsive and aggressive behavior. In C. D. Webster & M. A. Jackson (Eds.), *Impulsivity: Theory, assessment, and treatment* (pp. 394–408). New York: Guilford Press.

Daffern, M., & Howells, K. (2007). The prediction of imminent aggression and self-harm in personality disordered patients of a high security hospital using the HCR-20 Clinical Scale and the Dynamic Appraisal of Situational Aggression. *The International Journal of Forensic Mental Health*, *6*, 137–143.

Dear, G. E. (2008). Ten years of research into self-harm in the Western Australian Prison System: Where to next? *Psychiatry, Psychology, and Law*, *15*, 469–481.

Dear, G. E., Thomson, D. M., & Hills, A. M. (2000). Self-harm in prisons: Manipulators can also be suicide attempters. *Criminal Justice and Behavior*, *27*, 160–175. doi: 10.1177/0093854800027002002

DeHart, D. D., Smith, H. P., & Kaminski, R. J. (2009). Institutional responses to self-injurious behavior among inmates. *Journal of Correctional Health Care*, *15*, 129–141. doi:10.1177/1078345809331444

Dickinson, T., Wright, K. M., & Harrison, J. (2009). The attitudes of nursing staff in secure environments to young people who self-harm. *Journal of Psychiatric and Mental Health Nursing*, *16*, 947–951.

Dockley, A. (2001). Suicide and self-harm prevention: Repetitive self-harm among women in prison. *Prison Service Journal*, *138*, 27–29.

Donhauser, S. (2008). Examining the role of shame as a mediator of childhood sexual abuse and self-injury [Abstract]. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *68*, 4211–4234.

Douglas, N., & Plugge, E. (2008). The health needs of imprisoned female juvenile offenders: The view of the young women prisoners and youth justice professionals. *International Journal of Prisoner Health*, *4*, 66–67. doi:10.1080/17449200802038256

Dulit, R. A., Fyer, M. R., Leon, A. C., Brodsky, B. S., & Frances, A. J. (1994). Clinical correlates of self-mutilation in borderline personality disorder. *American Journal of Psychiatry*, *151*, 1305–1311.

Duncan, E. A. S., Nicol, M. M., Ager, A., & Dalgleish, L. (2006). A systematic review of structured group interventions with mentally disordered

offenders. *Criminal Behaviour and Mental Health*, *16*, 217–241. doi:10.1002/cbm.631

Duperouzel, H., & Fish, R. (2010). Hurting no-one else's body but your own: People with intellectual disability who self-injure in a forensic service. *Journal of Applied Research in Intellectual Disabilities*, *23*, 606–615. doi:10.1111/j.1468-3148.2010.00559.x

D'Zurilla, T. J., & Nezu, A. M. (2001). Problem solving therapies. In K. Dobson (Ed.), *Handbook of cognitive-behavioral therapies* (2nd ed.) (pp. 211–245). New York: Guilford Press.

Eccleston, L., & Sorbello, L. (2002). The RUSH program – real understanding of self-help: A suicide and self-harm prevention initiative within a prison setting. *Australian Psychologist*, *37*, 237–244. doi:10.1080/00050060210001706926

Evans, J. (2000). Interventions to reduce repetition of deliberate self-harm. *International Review of Psychiatry*, *12*, 44–47. doi:10.1080/09540260074111

Evershed, S., Tennant, A., Boomer, D., Rees, A., & Watson, A. (2003). Practice-based outcomes of dialectical behavior therapy (DBT) targeting anger and violence, with male forensic patients: A pragmatic and non-contemporaneous comparison. *Criminal Behaviour and Mental Health*, *13*, 198–213. doi:10.1002/cbm.542

Favazza, A. R. (1998). The coming of age of self-mutilation. *Journal of Nervous and Mental Disease*, *186*, 259–268. doi:10.1097/00005053-199805000-00001

Feiring, C., Taska, L., & Lewis, M. (2002). Adjustment following sexual abuse discovery: The role of shame and attributional style. *Developmental Psychology*, *38*, 79–92. doi:10.1037//0012-1649.38.1.79

Fish, R. M. (2000). Working with people who self-harm themselves in a forensic learning disability service: Experiences of direct care staff. *Journal of Intellectual Disabilities*, *4*, 193–207.

Fotiadou, M., Livaditis, M., Manou, I., Kaniotou, E., & Xenitidis, K. (2006). Prevalence of mental disorders and deliberate self-harm in Greek male prisoners. *International Journal of Law and Psychiatry*, *29*, 68–73. doi:10.1016/j.ijlp.2004.06.009

Franklin, R. K. (1988). Deliberate self-harm: Self-injurious behavior within a correctional mental health population. *Criminal Justice and Behavior*, *15*, 210–218. doi:10.1177/0093854888015002007

Fulwiler, C., Forbes, C., Santangelo, S. L., & Folstein, M. (1997). Self-mutilation and suicide attempt: Distinguishing features in prisoners. *The American Academy of Psychiatry and Law*, *25*, 69–77.

Gallagher, J., & Sheldon, K. (2010). Assessing the functions of self-harm behaviours for danger and severely personality disordered males in a high secure hospital. *British Journal of Forensic Practice*, *12*, 22–32. doi:10.5042/bjfp.2010.0035

Gardner, A. R., & Gardner, A. J. (1975). Self-mutilation, obsessionality, and narcissism. *British Journal of Psychiatry*, *127*, 127–132. doi:10.1192/bjp.127.2.127

Gough, K. (2005). Guidelines for managing self-harm in a forensic setting. *The British Journal of Forensic Practice*, *7*, 10–14. doi:10.1108/14636646200500009

Gough, K., & Hawkins, A. (2000). Staff attitudes to self-harm and its management in a forensic psychiatric service. *The British Journal of Forensic Practice*, *2*, 22–28. doi:10.1108/14636646200000030

Gratz, K. (2001). Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. *Journal of Psychopathology and Behavioral Assessment*, *23*, 253–263.

Gratz, K. L. (2003). Risk factors for and functions of deliberate self-harm: A conceptual review. *Clinical Psychology Science and Practice*, *10*, 192–205. doi:10.1093/clipsy.bpg022

Gratz, K. L. (2006). Risk factors for deliberate self-harm among female college students: The role and interaction of childhood maltreatment, emotional inexpressivity, and affect intensity/reactivity. *American Journal of Orthopsychiatry*, *76*, 238–250. doi:10.1037/0002-9432.76.2.238

Gratz, K.L., & Gunderson, J. G. (2006). Preliminary data on an acceptance-based emotion regulation group intervention for deliberate self-harm among women with borderline personality disorder. *Behavioral Therapy*, *37*, 25–35. doi: 10.1016/j.beth.2005.03.002

Gray, S. G., McGleish, A., MacCulloch, M. J., Hill, C., Timmons, D., & Snowden, R. (2003). Prediction of violence and self-harm in mentally disordered offenders: A prospective study of the efficacy of HCR-20, PCL–R, and psychiatric symptomatology. *Journal of Clinical Psychology*, *182*, 443–451. doi:10.1037/0022-006X.71.3.443

Gunnell, D., & Frankel, S. (1994). Preventions of suicide: Aspirations and evidence. *British Medical Journal*, *228*, 1227–1234. doi:10.1136/bmj.308.6938.1227

Haines, J. & Williams, C. L. (1997). Coping and problem solving of self-mutilators. *Journal of Clinical Psychology*, *53*, 177–186.

Haines, J., Williams, C. L., Brain, K. L., & Wilson G. V. (1995). The psychophysiology of self-mutilation. *Journal of Abnormal Psychology*, *104*, 471–489. doi:10.1037//0021-843X.104.3.471

Hasking, P., Momeni, R., & Swannell, S. (2008). The nature and extent of non-suicidal self-injury in a non-clinical sample of young adults. *Archives of Suicide Research*, *12*, 208–218. doi:10.1080/13811110802100957

Hawton, K., Arensman, E., Townsend, E., Bremner, S., Feldman, E., & Goldney, R. (1998). Deliberate self-harm: Systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *British Medical Journal*, *317*, 441–447. doi:10.1136/bmj.317.7156.441

Hawton, K., Houston, K., & Shepperd, R. (1999). Suicide in young people. *British Journal of Psychiatry*, *175*, 271–274. doi:10.1192/bjp.175.3.271

Hawton, K., McKeown, S., Day, A., Martin, P., O'Conner, M., & Yule, J. (1987). Evaluation of out-patient counseling compared with general practitioner care following overdoses. *Psychological Medicine*, *17*, 751–761. doi:10.1136/bmj.317.7156.441

Haycock, J. (1989). Manipulation and suicide attempts in jails and prisons. *Psychiatric Quarterly*, *60*, 85–98. doi:10.1007/BF01064365

Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York: Guilford Press.

Heney, J. (2007). Women offender programs and issues: Report on self-injurious behaviour in the Kingston prison for women. *The Correctional Service of Canada*. Retrieved September 1, 2010 from http://www.csc-scc.gc.ca/text/prgrm/fsw/selfinjuries/toce-eng.shtml.

Herpertz, S. (1995). Self-injurious behavior: Psychopathological and nosological characteristics in subtypes of self-injurers. *Acta Psychiatrica Scandanavica*, *91*, 57–68. doi: 10.1111/j.1600-0447.1995.tb09743.x

Herpertz, S., Sass, H., & Favazza, A. (1997). Impulsivity in self-mutilative behavior: Psychometric and biological findings. *Journal of Psychiatric Research*, *31*, 451–465. doi:10.1016/S0022-3956(97)00004-6

Hillbrand, M., Young, J. L., & Krystal, J. H. (1996). Recurrent self-injurious behavior in forensic patients. *Psychiatric Quarterly*, *67*, 33–45.

Holmqvist, R., Carlberg, M., & Hellgren, L. (2008). Deliberate self-harm behaviour in Swedish adolescent girls reports from public assessment and treatment agencies. *Child Youth Care Forum*, *37*, 1–13. doi:10.1007/s10566-007-9044-0

Hunter, E. M. (1988). Aboriginal suicides in custody: A view from the Kimberley. *Australian and New Zealand Journal of Psychiatry*, *22*, 273–282.

International Society for the Study of Self-injury (2007). *Definitional issues surrounding our understanding of self-injury*. Conference proceedings from the annual meeting. Retrieved from http://www.isssweb.org/aboutnssi.php.

Ireland, J. L., & Quinn, K. (2007). Officer attitudes towards adult male prisoners who self-harm: Development of an attitudinal measure and investigation of sex differences. *Aggressive Behavior*, *33*, 63–72. doi:10.1002/ab.20168

Ivanoff, A., & Hayes, L. M. (2001). Preventing, managing, and treating suicidal actions in high-risk offenders. In J. B. Ashford & B. Sales (Eds.), *Treating offenders with mental disorders* (pp. 313–331). Washington, D.C.: American Psychological Association Press. doi:10.1037/10390-012

James, D. J., & Graze, L. E. (2006). *Mental health problems of prison and jail inmates* (NCJ 213600). Washington, D.C.: U.S. Department of Justice, Bureau of Justice Statistics.

Jeglic, E. L., Vanderhoff, H. A., & Donovick, P. J. (2005). The function of self-harm behavior in a forensic population. *International Journal of Offender Therapy and Comparative Criminology*, *49*, 131–142. doi:10.1177/0306624×04271130

Joiner, Jr., T. E., Conwell, Y., Fitzpatrick, K. K., Witte, T. K., Schmidt, N. B., Berlin, M. T., . . . Rudd, M. D. (2005). Four studies on how past and current suicidality relate even when "everything but the kitchen sink" is covaried. *Journal of Abnormal Psychology*, *114*, 291–303. doi:10.1037/0021-843X.114.2.291

Kenning, C., Cooper, J., Short, V., Shaw, J., Abel, K., & Chew-Graham, C. (2010). Prison staff and women prisoner's views on self-harm; their implications for service delivery and development: A qualitative study. *Criminal Behavior and Mental Health*, *20*, 274–284. doi:10.1002/cbm.777

Kenny, D. T., Lennings, C. J., & Munn, O. A. (2008). Risk factors for self-harm and suicide in incarcerated young offenders: Implications for policy and practice. *Journal of Forensic Psychology Practice*, *8*, 358–382. doi:10.1080/15228930802199317

Kent, A., & Waller, G. (1999). The impact of childhood emotional abuse: An extension of the Child Abuse and Trauma Scale. *Child Abuse and Neglect*, *22*, 393–399. doi:10.1016/S0145-2134(98)00007-6

Kettles, A., Moir, E., Woods, P., Porter, S., & Sutherland, E. (2004). Is there a relationship between risk assessment and observation level? *Journal of Psychiatric and Mental Health Nursing*, *11*, 156–164. doi:10.1111/j.1365-2850.2003.00699.x

Kirchner, T., Forns, M., & Mohino, S. (2008). Identifying the risk of deliberate self-harm among young prisoners by means of coping typologies. *Suicide and Life-Threatening Behavior*, *38*, 42–48. doi:10.1521/suli.2008.38.4.442

Klonsky, E. D. (2007). The functions of deliberate self-injury: A review of the evidence. *Clinical Psychology Review*, *27*, 226–239.

Klonsky, E. D. (2008, November). *Mechanisms for self-injurious behavior*. Symposium presented at a meeting of the International Society for the Improvement & Teaching of Dialectical Behavior Therapy, Orlando, Florida, U.S.

Klonsky, E. D., & Glenn, C. R. (2009). Assessing the functions of non-suicidal self-injury: Psychometric properties of the Inventory of Statements About Self-injury (ISAS). *Journal of Psychopathology and Behavioral Assessment*, *31*, 215–219. doi:10.1007/s10862-008-9107-z

Klonsky, E. D., & Moyer, A. (2008). Childhood sexual abuse and non-suicidal self-injury: Meta-analysis. *The British Journal of Psychiatry*, *192*, 166–170. doi:10.1192/bjp.bp.106.030650

Klonsky, E. D., Oltmanns, T. F., & Turkheimer, E. (2003). Deliberate self-harm in a nonclinical population: Prevalence and psychological correlates. *American Journal of Psychiatry*, *160*, 1501–1508. doi:10.1176/appi.ajp.160.8.1501

Koons, C., Robins, C. J., Tweed, J. L., Lynch, T. R., Gonzalez, A. M., & Morese, J. Q. (2001). Efficacy of dialectical behavior therapy in women veterans with borderline personality disorder. *Behavior Therapy*, *32*, 371–390. doi:10.1016/S0005-7894(01)80009-5

Kreitman N. (1977). *Parasuicide.* London: Wiley.

Lader, D., Singleton, N., & Meltzer, H. (2003). Psychiatric morbidity among young offenders in England and Wales. *International Review of Psychiatry*, *15*, 144–147. doi:10.1080/0954026021000046074

Lanes, E. (2009). The association of administrative segregation placement and other risk factors with the self-injury-free time of male prisoners. *Journal of Offender Rehabilitation*, *48*, 529–546. doi:10.1080/10509670903081342

Laye-Gindhu, A., & Schonert-Reichl, K. A. (2005). Nonsuicidal self-harm among community adolescents: Understanding the 'whats' and 'whys' of self-harm. *Journal of Youth and Adolescence*, *34*, 447–457. doi:10.1007/s10964-005-7262-z

Liebowitz, M. R. (1987). A medication approach. *Journal of Personality Disorders*, *1*, 325–327. doi:10.1521/pedi.1987.1.4.325

Linehan, M. M. (1993). *The cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford.

Linehan, M. M. (2000). Behavioral treatments of suicidal behaviors: Definitional obfuscation and treatment outcomes. In R. W. Maris, S. S. Canetto, J. L. McIntosh, & M. M. Silverman (Eds.), *Review of suicidology* (pp. 84–111). New York: Guilford. doi:10.1111/j.1749-6632.1997.tb52367.x

Linehan, M. M., Comtois, K. A., Brown, M. Z., Heard, H. L., & Wagner, A. (2006). Suicide Attempt Self-Injury Interview (SASII): Development, reliability, and validity of a scale to assess suicide attempts and intentional self-injury. *Psychological Assessment*, *18*, 303–312.

Lloyd, E., Kelley, M. L., & Hope, T. (1997, April). *Self-mutilation in a community sample of adolescents: Descriptive characteristics and provisional prevalence rates*. Paper presented at the annual meeting of the Society for Behavioral Medicine, New Orleans, LA.

Lohner, J., & Konrad, N. (2006). Deliberate self-harm and suicide attempt in custody: Distinguishing features in male inmates' self-injurious behavior. *International Journal of Law and Psychiatry*, *29*, 370–385. doi:10.1080/17449200701321654

Lohner, J., & Konrad, N. (2007). Risk factors for self-injurious behavior in custody: Problems of definition and prediction. *International Journal of Prisoner Health*, *3*, 135–161. doi:10.1080/17449200701321654

Loughran, M., & Seewoonarain, K. (2005). Characteristics of need and risk among women prisoners referred to inreach mental health services. *The British Journal of Forensic Practice*, *7*, 12–21. doi:10.1108/14636646200500017

Low, G., Jones, D., Dugan, C., Power, M., & Macleod, A. (2001). The treatment of deliberate self harm in borderline personality disorder using dialectical behavior therapy: A pilot study in a high security hospital. *Behavioural and Cognitive Psychotherapy*, *29*, 85–92. doi:10.1017/S1352465801001096

Maden, A., Chamberlain, S., & Gunn, J. (2000). Deliberate self-harm in sentenced male prisoners in England and Wales: Some ethnic factors. *Criminal Behavior and Mental Health*, *10*, 199–204. doi:10.1002/cbm.357

Mangnall & Yurkovich (2010). A grounded theory exploration of deliberate self-harm in incarcerated women. *Journal of Forensic Nursing*, *6*, 88–95. doi:10.1111/j.1939-3938.2010.01072.x

Mannion, A. (2009). Self-harm in a dangerous and severely personality disordered population. *Journal of Forensic Psychiatry and Psychology*, *20*, 322–331. doi:10.1080/14789940802377106

Marzano, L., & Adler, J. R. (2007). Supporting staff working with prisoners who self-harm: A survey of support staff dealing with self-harm in prisons in England and Wales. *International Journal of Prisoner Health*, *3*, 268–282. 10.1192/bjp.bp.109.075424

Marzano, L., Fazel, S., Rivlin, A., & Hawton, K. (2010). Psychiatric disorders in women prisoners who have engaged in near-lethal self-harm: Case-control study. *The British Journal of Psychiatry*, *197*, 219–226. doi:10.1192/bjp.bp.109.075424

McLeavey, B. C., Daly, R. J., Ludgate, J. W., & Murray, C. M. (1994). Interpersonal problem solving skills training in the treatment of self-poisoning patients. *Suicide & Life-Threatening Behavior*, *24*, 382–394.

Melzer, D., Tom, B. D. M., Brugha, T., Fryers, T., Gatward, R., Grounds, A., . . . Meltzer, H. (2004). Access to medium secure psychiatric care in England and Wales. 1: A national survey of admission assessments. *Journal of Forensic Psychiatry & Psychology*, *15*, 7–31. doi:10.1080/14789940310001648203

Miller, S., & Fritzon, K. (2007). Functional consistency across two behavioural modalities: Fire-setting and self-harm in female special hospital patients. *Criminal Behaviour and Mental Health*, *17*, 31–44. doi:10.1002/cbm.637

Milligan, R. J., & Andrews, B. (2005). Suicidal and other self-harming behaviour in offender women: The role of shame, anger, and childhood abuse. *Legal and Criminological Psychology*, *10*, 13–25. doi:10.1348/135532504×15439

Muehlenkamp, J. J. (2006). Empirically supported treatments and general therapy guidelines for non-suicidal self-injury. *Journal of Mental Health Counseling*, *28*, 166–185.

NICE (2004). *National Institute for Clinical Excellence, Self-Harm: The short term physical and psychological management and secondary prevention of self-harm in primary and secondary care*. London: NICE.

Nock, M. K., Holmberg, E. B., Photos, V. I., & Michel, B. D. (2007). Self-injurious thoughts and behaviors interview: Development, reliability, and validity in an adolescent sample. *Psychological Assessment*, *19*, 309–317. doi:10.1037/1040-3590.19.3.309

Nock, M. K., & Prinstein, M. J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology*, *72*, 885–890. doi:10.1037/0022-006X.72.5.885

Nock, M. K., Prinstein, M. J., & Sterba, S. K. (2010). Revealing the form and function of self-injurious thoughts and behaviors: A real-time ecological assessment study among adolescents and young adults. *Journal of Abnormal Psychology*, *118*, 816–827. doi:10.1037/a0016948

O'Brien, M., Mortimer, L., Singleton, N., & Meltzer, H. (2003). Psychiatric morbidity among women prisoners in England and Wales. *International Review of Psychiatry*, *15*, 153–157.

Oliver, C., Hall, S., Hales, J., Murphy, G., & Watts, D. (1998). The treatment of severe self-injurious behavior by the systematic fading of restraints: Effects on self-injury, self-restraint, adaptive behavior, and behavioral correlates of affect. *Research in Developmental Disabilities*, *19*, 143–165. doi:10.1016/S0891-4222(97)00048-6

Pattison, M. E., & Kahan, J. (1983). The deliberate self-harm syndrome. *Journal of Psychiatry*, *140*, 867–872.

Paulus, P. B., & Dzindolet, M. T. (1993). Reactions of male and female inmates to prison confinement: Further evidence for a two-component model. *Criminal Justice and Behavior*, *20*, 149–166. doi:10.1177/0093854893020002003

Pengelly, N., Ford, B., Blenkiron, P., & Reilly, S. (2008). Harm minimization after repeated self-harm: Development of a trust handbook. *Psychiatric Bulletin*, *32*, 60–63.

Perry, A. E., & Gilbody, S. (2009). Detecting and predicting self-harm behavior in prisoners: A prospective psychometric analysis of three instruments. *Social Psychiatry and Psychiatric Epidemiology*, *44*, 853–861. doi:10.1007/s00127-009-0007-7

Perry, A. E., & Olason, D. T. (2009). A new psychometric instrument assessing vulnerability to risk of suicide and self-harm behavior in offenders: Suicide concerns for offenders in prison environment (SCOPE). *International Journal of Offender Therapy and Comparative Criminology*, *53*, 385–400. doi:10.1177/0306624×08319418

Phelan, M., Slade, M., Thornicroft, G., Dunn, G., Holloway, F., Wykes, T. . . . Hayward, P. (1995). The Camberwell Assessment of Need: The validity and reliability of an instrument to assess the needs of people with severe mental illness. *British Journal of Psychiatry*, *167*, 589–595. doi:10.1192/bjp.167.5.589

Pratt, D., Appleby, L., Piper, M., Webb, R., & Shaw, J. (2010). Suicide in recently released prisoners: A case-control study. *Psychological Medicine*, *40*, 827–835. doi:10.1017/S0033291709991048

Robinson, D., & Kettles, A. M. (1998). The emerging profession of forensic nursing: Myth or reality. *Psychiatric Care*, *5*, 214–218.

Roe-Sepowitz, D. (2007). Characteristics and predictors of self-mutilation: A study of incarcerated women. *Criminal Behavior and Mental Health*, *17*, 312–321. doi:10.1002/cbm.665

Ross, S., & Heath, N. (2002). A study of the frequency of self-mutilation in a community sample of adolescents. *Journal of Youth and Adolescence*, *31*, 67–77.

Rutherford, H., & Taylor, P. J. (2004). The transfer of women offenders with mental disorder from prison to hospital. *The Journal of Forensic Psychiatry & Psychology*, *15*, 108–123. doi:10.1080/14789940310001641272

Sakelliadis, E. I., Papadodima, S. A., Sergentanis, T. N., Giotakos, O., & Spiliopoulou, C. A. (2010). Self-injurious behavior among Greek male prisoners: Prevalence and risk factors. *European Psychiatry: The Journal of Association of European Psychiatrists*, *25*, 151–158. doi:10.1016/j.eurpsy.2009.07.014

Sakinofsky, I. (2000). Repetition of suicidal behaviour. In K. Hawton & K. van Heeringen (Eds.), *The international handbook of suicide and attempted suicide* (pp. 385–404). Chichester: Wiley. doi:10.1002/9780470698976.ch21

Schwartz, R. H., Cohen, P., Hoffmann, N. G., & Meeks, J. E. (1989). Self-harm behaviors (carving) in female adolescent drug abusers. *Clinical Pediatrics*, *28*, 340–346. doi:10.1177/000992288902800801

Shapiro, S. (1987). Self-mutilation and self-blame in incest victims. *American Journal of Psychotherapy*, *41*, 46–55.

Short, V., Cooper, J., Shaw, J., Kenning, C., Abel, K. & Chew-Graham, C. (2009). Custody vs. care: Attitudes of prison staff to self-harm in women prisoners-a qualitative study. *The Journal of Forensic Psychiatry & Psychology*, *20*, 408–426. doi:10.1080/14789940802377114

Simeon, D., Stanley, B., Frances, A., Mann, J. J., Winchel, R., & Stanley, M. (1992). Self-mutilation in personality disorders: Psychological and biological correlates. *American Journal of Psychiatry*, *149*, 221–226.

Smith, H. P., & Kaminski, R. J. (2010). Inmate self-injurious behaviors: Distinguishing characteristics within a retrospective study. *Criminal Justice and Behavior*, *37*, 81–96. doi:10.1177/0093854809348474

Smith, H. P., & Kaminski, R. J. (2011). Self-injurious behaviors in state prisons: Findings from a national survey. *Criminal Justice and Behavior*, *38*, 26–41. doi:10.1177/0093854810385886

Snow, L. (1997). A pilot study of self-injury amongst women prisoners. *Issues in Criminological and Legal Psychology*, *28*, 50–59.

Snow, L. (2002). Prisoners' motives for self-injury and attempted suicide. *British Journal of Forensic Practice*, *4*, 18–29. doi:10.1108/14636646200200023

Suyemoto, K. (1998). The functions of self-mutilation. *Clinical Psychology Review*, *18*, 531–554. doi:10.1016/S0272-7358(97)00105-0

Tryer, P., Thompson, S., Schmidt, U., Jones, V., Knapp, M., Davidson, K., . . . Wessely, S. (2003). Randomized controlled trial of brief cognitive behaviour therapy versus treatment as usual in recurrent deliberate self-harm: The POMPACT study. *Psychological Medicine*, *33*, 969–976.

van Egmond, M., & Diekstra, R.F.W. (1989). The predictability of suicidal behavior: The results of a meta-analysis of published studies. In R. F. W. Diekstra, R. Maris, S. Platt, A. Schmidtke, & G. Sonneck (Eds.), *Suicide and its prevention: The role of attitude and imitation* (pp. 37–61). Leiden, Netherlands: E. J. Brill.

van der Kolk, B.A., Perry, C., & Herman, J. L. (1991). Childhood origins of self-destructive behavior. *American Journal of Psychiatry*, *148*, 1665–1671.

Vollm, B. A., & Dolan, M. C. (2009). Self-harm among UK female prisoners: A cross-sectional study. *The Journal of Forensic Psychiatry & Psychology*, *20*, 741–751. doi:10.1080/14789940903174030

Walsh, B. W. (2007). Clinical assessment of self-injury: A practical guide. *Journal of Clinical Psychology: In Session*, *63*, 1057–1068. doi:10.1002/jclp.20413

Walsh, B. W., & Rosen, P. M. (1988). *Self-mutilation: Theory, research, and treatment.* New York: Guilford Press.

Welch, S. S., & Linehan, M. M. (2002). High-risk situations associated with parasuicide and drug use in borderline personality disorder. *Journal of Personality Disorders*, *16*, 561–569. doi:10.1521/pedi.16.6.561.22141

Welfare, H., & Mitchell, J. (2005). Addressing vulnerability amongst imprisoned juvenile offenders: An evaluation of the Access course. *International Journal of Prisoner Health*, *1*, 171–181. doi:10.1080/17449200600552912

Whitehead, E., & Mason, T. (2006). Assessment of risk and special observations in mental health practice: A comparison of forensic and non-forensic settings. *International Journal of Mental health Nursing*, *15*, 235–241. doi:10.1111/j.1447-0349.2006.00429.x

Wilkins, J., & Coid, J. (1991). Self-mutilation in female remanded prisoners: I. An indicator of severe psychopathology. *Criminal Behaviour and Mental Health*, *1*, 247–267.

Young, M. H., Justice, J. V., & Erdberg, P. (2006). Risk of harm: Inmates who harm themselves while in prison psychiatric treatment. *Journal of Forensic Science*, *51*, 156–162. doi:10.1111/j.1556-4029.2005.00023.x

Zapf, P. A. (2006). *Suicide Assessment Manual for Inmates*. Burnaby, BC: Mental Health, Law, and Policy Institute.

Zlotnick, C., Hohlstein, L. A., Shea, M. T., Pearlstein, T., Recupero, P., & Bidadi, K. (1996). The relationship between sexual abuse and eating pathology. *International Journal of Eating Disorders*, *20*, 129–134. doi:10.1002/(SICI)1098-108X(199609)20:2<129::AID-EAT2>3.0.CO;2-I

Zlotnick, C., Mattia, J. I., & Zimmerman, M. (1999). Clinical correlates of self-mutilation in a sample of general psychiatric patients. *Journal of Nervous Mental Disorders*, *187*, 296–301. doi:10.1097/00005053-199905000-00005