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_____ **Research Report** _____

**Correlates and Trajectories to
Self-Injurious Behaviour in
Federally Sentenced Men**

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Correlates and Trajectories to Self-Injurious Behaviour in Federally Sentenced Men

Jenelle Power

&

Amelia Usher

Correctional Service of Canada

August 2011

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Executive Summary

Key words: *self-injurious behaviour; mental health; male offenders.*

Non-suicidal self-injury (NSSI) may be defined as deliberate bodily harm or disfigurement without suicidal intent and for purposes not socially sanctioned. It can include behaviours such as cutting, ligature use, burning, hitting, swallowing sharp or indigestible objects, inserting and removing objects, and head banging. The treatment and prevention of NSSI is a priority for many correctional organizations. However, there is a lack of knowledge regarding NSSI in male offenders. The purpose of this report was to improve understanding of NSSI in federally sentenced men in Canada. The study compares offenders with a history of NSSI and those who do not have this history. In addition, the origins of the behaviour are explored.

A total of 199 federally sentenced men participated in the study. These participants were recruited from 11 medium and maximum security federal institutions across Canada. Participants completed a semi-structured interview and a series of questionnaires designed to assess their NSSI and factors associated with their NSSI, such as mental health history, degree of impulsivity, aggression, and experiences of childhood trauma.

One hundred and four men with a history of NSSI were compared to 95 men without this history. Participants who had a history of NSSI scored significantly higher on measures of depression, hostility, impulsivity, aggression, and childhood abuse. Participants in the NSSI group were also significantly more likely to meet the criteria for depression, substance abuse, panic disorder, posttraumatic stress disorder, antisocial personality disorder, and borderline personality disorder.

An analysis of the proposed origins of NSSI revealed that offenders with a history of NSSI were significantly more likely to have experienced all forms of childhood abuse, including sexual abuse. These offenders are in turn more likely to experience depression, substance abuse, and borderline personality disorder, all of which increase likelihood of engaging in NSSI. Impulsivity, anger, and aggression were also found to be related to NSSI, with anger showing the strongest effects. Suicide attempts and NSSI, while correlated, were viewed as distinct behaviours by the participants. Partial support was found for the impulsivity/anger/aggression model and the childhood abuse model to predict NSSI.

This study improves the current understanding of NSSI in federally sentenced men and is generally concordant with the findings from recent studies of NSSI in women offenders, with a few exceptions. Anger was not predictive of NSSI in women, but was predictive in men. Sexual orientation was significantly related to NSSI for women but not men. No differences in coping were found in women but men with a history of NSSI were more likely to use self-distraction and venting as methods of coping than those without this history. Male offenders residing in treatment centres are not included in the present study, but will be addressed in a forthcoming report. Further research could contribute to the effective management of NSSI in correctional settings through the development of an empirically-based risk tool to assess the risk for NSSI or a suicide attempt during their sentence.

Table of Contents

Acknowledgements	ii
Executive Summary	iii
Table of Contents	iv
List of Tables	vi
List of Figures	vii
List of Appendices	vii
Introduction	1
Correlates of NSSI	2
Method	7
Participants	7
Measures	11
Semi-structured interview protocol.	11
Structured Clinical Interview for DSM Axis I Disorders (SCID-I).	11
Structured Clinical Interview for DSM Axis II Disorders (SCID-II).	12
The Short Form Buss-Perry Aggression Questionnaire (BPAQ-SF).	12
Depression, Hopelessness & Suicide (DHS) Screening Form.	13
Brief COPE.	13
Childhood Trauma Questionnaire (CTQ).	14
Brief Symptom Inventory (BSI).	14
The Offender Self-Injurious Behaviour Inventory (OSIBI).	15
Archival Data	15
Impulsivity Indicators.	16
Procedure/Analytic Approach.....	16
NSSI, Suicide Attempts, and Comparison Groups.	17
Statistical techniques.	18
Path analysis.....	18
Missing data.	18
Results	20
Mental Health.....	25
Experience of a Head Injury	28
Sexual Behaviour and Orientation	29
Trajectories to NSSI.....	30
Childhood Abuse Model.	30
Path analysis.....	30

Impulsivity/Anger/Aggression Model.....	33
Discussion.....	36
NSSI and Suicide Attempts	36
Mental Health.....	36
Childhood Abuse.....	38
Impulsivity/Anger/Aggression.....	39
Coping	40
Sexual Orientation.....	40
Conclusions.....	41
References	43
Appendices	55

List of Tables

Table 1: <i>Demographic and Criminal Profile of Participants and Comparison Sample</i>	9
Table 2: <i>Distribution of Sample and Comparison by Region</i>	11
Table 3: <i>History of Non-Suicidal Self-Injury and Suicide Attempts in the Sample</i>	20
Table 4: <i>Demographic and Criminal Profile of Participants by History of NSSI</i>	22
Table 5: <i>A Comparison of Participants With and Without a History of NSSI on Questionnaire Data</i>	24
Table 6: <i>A Comparison of Participants With and Without a History of NSSI on Mental Health Categories based on SCID Data</i>	27
Table 7: <i>A Comparison of Participants With and Without a History of NSSI on Mental Health Diagnoses Based on Interview Data</i>	28
Table 8: <i>Sexual Orientation and Behaviour of Participants With and Without a History of NSSI</i>	29
Table 9: <i>Bivariate Correlations for the Childhood Abuse Model</i>	30
Table 10: <i>Simple Regression Results for Childhood Sexual Abuse Predicting Non-Suicidal Self-Injury, Depression, Posttraumatic Stress Disorder, Borderline Personality Disorder and Substance Abuse</i>	31
Table 11: <i>Standard Multiple Regression Results: Regressing Non-Suicidal Self-Injury on Depression, Posttraumatic Stress Disorder, Borderline Personality Disorder, and Substance Abuse</i>	31
Table 12: <i>Bivariate Correlations for the Impulsivity/Anger/Aggression Model</i>	33
Table 13: <i>Standard Multiple Regression Results: Regressing Non-Suicidal Self-Injury on Impulsivity, Anger, and Aggression</i>	34

List of Figures

<i>Figure 1.</i> The Childhood Abuse Model	32
<i>Figure 2.</i> The Impulsivity/Anger/Aggression Model	35

List of Appendices

Appendix A: Semi-Structured Interview Schedule.....	55
Appendix B: Offender Self-Injurious Behaviour Inventory (OSIBI)	58
Appendix C: DFIA indicators used for impulsivity measure	66

Introduction

Self-injurious behaviour (SIB) is a complex and troubling behaviour that can present itself in multiple forms and for a variety of reasons. Improvements in the treatment and prevention of SIB contribute to a safer environment for offenders and staff and therefore research in this area is a priority for many correctional organizations. While the study of SIB is increasingly gaining prominence in the literature, there is a lack of knowledge regarding SIB in male offender populations.

SIB may be defined as any type of direct bodily harm or disfigurement that is deliberately inflicted on oneself that is *not* considered to be socially acceptable (Favazza, 1998, 1999; Simeon & Favazza, 2001; Walsh & Rosen, 1988). SIB is a perplexing behaviour that manifests in many forms, such as cutting, burning, ligature use, hitting, swallowing sharp or indigestible objects, inserting and removing objects, and head banging. Less common but more extreme versions have also been reported, such as eye enucleation, castration, and amputation (Favazza, 1998).

The study of SIB has been hampered by inconsistencies in terminology and definitions. Other terms that have been used to describe this behaviour include parasuicide, suicidal behaviours, self-aggression, self-destruction, self-mutilation, simulated suicide, delicate wrist-cutting, deliberate self-harm, self-injurious behaviour, self-harm, and non-suicidal self-injury (NSSI). In this paper, whenever possible, the more precise term NSSI will be used to describe self-injury undertaken without suicidal intent. In practice, suicidal intent is often difficult to discern (Claes & Vandereycken, 2007). Therefore, for those situations where suicidal intent is unknown or unclear, the term SIB will be used.

In the general population, approximately 4% of adults have engaged in NSSI at least once in their lives (Briere & Gil, 1998; Klonsky, Oltmanns, & Turkheimer, 2003). Prevalence rates of NSSI occurring while incarcerated in the general population of correctional institutions range from 1-5% (Fotiadou, Livaditis, Manou, Kaniotou, & Xenitidis, 2006; Maden, Chamberlain, & Gunn, 2000; Maden, Swinton, & Gunn, 1994; Smith & Kiminski, 2010; Toch, 1975; Western Australia Department of Justice, 2002). Lifetime prevalence rates of NSSI in incarcerated populations are considerably higher,

with rates of 15% to 17% found in incarcerated men (Fotiadou et al., 2006; Maden et al., 2000). Lifetime prevalence rates of SIB in federally sentenced women in Canada have been estimated at 24-38% (Power & Usher, in press; 2010). Cutting has been found to be the most common type of SIB in a wide variety of populations (e.g., Briere & Gil, 1998; De Leo & Heller, 2004; Favazza & Conterio, 1989; Heney, 1990; Howard League, 1999; Langbehn & Pfohl, 1993; Nixon, Coultier & Aggarwal, 2002; Rodham, Hawton & Evans, 2004; Shea & Shea, 1991).

Correlates of NSSI

While those who engage in SIB appear to be a heterogeneous group, several psychological and historical variables have been found to be correlated with the behaviour. An extensive review of the research literature can be found in a report published by CSC in 2010 (Power & Brown, 2010). Here a brief summary of some pertinent correlates will be reviewed.

Significant relationships between ethnicity and self-injury have been found in several studies. Those studies that focus on SIB (i.e., those that include suicide attempts) have found increased prevalence in individuals who belong to ethnic minority groups, such as Aboriginal, Hispanic in the USA, and South Asian women in the UK, compared to those who are Caucasian (Bhugra, Desai, & Baldwin, 1999; Cooper et al., 2006; Evans, Evans, Morgan, Hayward, & Gunnell, 2005; Merrill & Owens, 1986). Studies that focus specifically on NSSI, however, have usually found that Caucasian samples have higher rates than other ethnic groups in psychiatric, community, and forensic populations (Borrill, Snow, Medlicott, & Paton, 2003; Guertin, Lloyd-Richardson, Spiritio, Donaldson, & Boergers, 2001; Jones 1986; Ross & Heath, 2002; Shea & Shea, 1991; Smith & Kaminski, 2010; Turell & Armsworth, 2003), including male offenders in the UK (Maden et al., 2000). While some studies have failed to find a higher rate among Caucasian individuals (Whitlock, Eckenrode, & Silverman, 2006), no study has found that Caucasians have a lower rate than non-Caucasians (Klonsky & Muehlenkamp, 2007).

Individuals with substance abuse disorders are also more likely to engage in NSSI (Borrill et al., 2003; Langbehn & Pfohl, 1993; Young et al., 2006). Chronic alcohol misuse and acute alcohol intoxication have been associated with SIB and suicide attempts

(Black, Yates, Petty, Noyes & Brown, 1986; Favazza & Conterio, 1988; Merrill, Milner, Owens & Vale, 1992; Pattison & Kahan, 1983; Roy, Lamparski, DeJong, Moore, & Linnoila, 1990; Suokas & Lönnqvist, 1995). Research has not yet determined the nature of the relationship between SIB and substance use. SIB may be more likely to occur during periods of acute intoxication or SIB may result from the consequences of chronic substance use, given that chronic use may cause neurological deficits and impairments in functioning (Hufford, 2001; McCloskey & Berman, 2003). Substance abuse is particularly high in offender populations, with approximately 69% of Canadian federal offenders having problems with substance abuse (Kunic & Grant, 2006), making a relationship between SIB and substance use a particularly important one for offender populations.

Borderline personality disorder has received considerable attention in the study of SIB. Borderline personality disorder is a complex mental health syndrome characterized by instability of interpersonal relationships, self-image, and affect, in addition to marked impulsivity (American Psychiatric Association, 2000; Paris, 2005). Many studies have established a correlation between NSSI and borderline personality disorder (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Young, Justice, & Erdberg, 2006). A correlation would be expected given that one of the criteria for borderline personality disorder is engaging in NSSI or suicide attempts. However, individuals with a history of NSSI are twice as likely to report symptoms of borderline personality disorder, even when the SIB criterion is excluded from analysis (Klonsky et al., 2003). Much of the research regarding borderline personality disorder has focussed on women and research on men is limited. Therefore, it is unclear whether women actually have higher rates of borderline personality disorder or if this perceived gender difference is an artefact of gender bias in diagnosis (Widiger, 1998). Gender differences in diagnoses of borderline personality disorder have generally not been found in epidemiological studies (Coid, Yang, Tyrer, Roberts, & Ullrich, 2006; Grant et al., 2008; Jackson & Burgess, 2000; Lenzenweger, Lane, Loranger, & Kessler, 2007; Torgersen, Kringlen, & Cramer, 2001; Zimmerman & Coryell, 1989). In correctional populations, the rates of borderline personality are high for both genders, with rates ranging from 19% to 57% for men (Black et al., 2007; Blackburn & Coid, 1999; Singleton et al., 1997) and 20% to 49% for

women (Jordan et al., 1996; Singleton et al., 1997; Zlotnick, Mattia, & Zimmerman, 1999) with no clear difference between genders established. Thus, borderline personality disorder is likely an important factor for understanding NSSI for men as well as women in correctional populations.

Posttraumatic stress disorder is a psychological disorder that includes a characteristic set of symptoms arising from exposure to an extremely traumatizing event (American Psychiatric Association, 2000). A correlation between NSSI and posttraumatic stress disorder has been found in numerous studies, including those with correctional populations (e.g., Kisiel & Lyons, 2001; Prinstein et al., 2008; Salina, Lesondak, Razzano & Weilbaecher, 2007; Weaver, Cahrd, Mechanic & Etzel, 2004; Weierich & Nock, 2008). Research suggests that a large proportion of male offenders have experienced some form of childhood victimization, with estimates of up to 65% (Johnson, Ross, Taylor, Williams, Carvajal & Peters, 2006; Weeks & Widom, 1998). Rates of physical assault while incarcerated are also high (Wolff, Blitz, Shi, Siegel & Bachman, 2008) and assaults on inmates with mental disorders are thought to be even higher (Blitz, Wolff & Shi, 2008). High rates of posttraumatic stress disorder are not surprising in an offender population given that physical and sexual abuse can lead to this disorder. With the high rates of posttraumatic stress disorder, history of abuse, and substance abuse found in offender populations, it would therefore be expected that offenders are a group at increased risk for NSSI.

A relationship between NSSI and a history of childhood abuse has been well-established. While many studies have focused on women and girls (e.g., Borrill et al., 2003; Fillmore & Dell, 2005; Gladstone et al., 2004; Roe-Sepowitz, 2007; Turell & Armsworth, 2003; Zlotnick et al., 1996), others have found this relationship in mixed gender samples (Gratz, Conrad & Roemer, 2002; Lipschitz et al., 1999; van der Kolk, Perry, & Herman, 1991; Wiederman, Sansone & Sansone, 1999) and young men as well (Matsumoto et al., 2005). This relationship is correlational, however, and the mechanism by which abuse may lead to NSSI is not currently well-understood (Yates, Carlson & Egeland, 2008). Although not yet fully understood, one mechanism through which abuse could lead to NSSI is through changes in brain structure in response to stress (Buchanan & Tranel, 2008; Sapolsky, 1996). Excessive exposure to cortisol, a hormone produced in

response to stress, can lead to damage to the hippocampus, a part of the brain responsible for learning and memory (Squire & Zola-Morgan, 1991).

SIB has been found to be correlated with same-sex attraction and behaviour in community samples of adolescents and adults; the research focussed on men and boys (Bagley & Tremblay, 1997; Cochran & Mays, 2000; de Graaf, Sandfort & Have, 2006; DuRant, Krowchuk & Sinal, 1998; Herrell et al., 1999; Faulkner & Cranston, 1998; Fergusson, Horwood & Beautrais, 1999; Garofalo, Wolf, Wissow, Woods & Goodman, 1999; Remafedi et al., 2008; Skegg, Nada-Raja, Dickson, Paul & Williams, 2003; Story, Resnick & Blum, 1998). NSSI has also been found to be correlated with not identifying as heterosexual and engaging in sex with a same-sex partner in federally sentenced women in Canada (Power & Usher, in press).

While NSSI and suicide attempts are distinct behaviours, there is a correlation between the two (Brown, Comtois, & Linehan, 2002; Matsumoto et al., 2004; Matsumoto et al., 2005; Muehlenkamp, 2005; Nixon et al., 2002; Walsh, 2006). Although a very small percentage of individuals who engage in SIB will eventually die by suicide, many of those who eventually die by suicide had a history of SIB. For example, Hawton, Zahl and Weatherall (2003) found that among a follow-up study sample of 11,583 who presented at a hospital following SIB, about 5% of men and 2% of women subsequently died by suicide. Owens, Horrocks and House (2002) conducted a systematic review of available research and found a somewhat higher rate of 7% completed suicides after nine years. Given that about 0.01% of the Canadian population dies by suicide, these rates are much higher than that of the general population (Statistics Canada, 2010a; 2010b). Conversely, in a study of federal offenders in Canada, 74% of offenders who died by suicide had a history of SIB (Power & Riley, 2010). These findings suggest that NSSI may be an important risk factor for suicide.

The effective treatment and prevention of SIB is important for correctional organizations. Effective management of this behaviour will contribute to a safe and secure environment for both offenders and institutional staff. Currently, there is a lack of knowledge regarding SIB in federally sentenced men in Canada. While past studies have examined SIB in other populations, including federally sentenced women (Power & Usher, in press; 2010) and have provided some information on factors that are correlated

with the behaviour, targeted research is required for this unique population in order to better inform treatment and prevention efforts.

The purpose of this report is to improve understanding of NSSI in federally sentenced men in Canada. This report is part of a large-scale, ongoing research study conducted by CSC for the purpose of exploring SIB in-depth. It parallels a program of research conducted to study SIB in federally sentenced women (Power & Usher, in press; 2010). Additionally, a literature review on SIB and a report comparing suicides and SIB within CSC have been published (Power & Brown, 2010; Power & Riley, 2010). Other reports in this series will examine SIB through qualitative and archival research. The present study provides a comparison between men with a history of NSSI and those who do not have this history. In addition, the origins of the behaviour are explored, as well as possible trajectories to NSSI.

Method

This report is the first in a series of reports based on a national study of SIB in male offenders and is an extension of the women offenders' report entitled *Correlates and Trajectories to Self-injurious Behaviour in Federally Sentenced Women* (Power & Usher, in press). The study of NSSI in federally sentenced men followed a very similar protocol to that of the federally sentenced women's study, the methodology for which can be found in Power and Usher (in press).

Participants

Participants were recruited from medium and maximum security institutions in all five regions within the federal correctional service. Minimum security institutions were excluded because NSSI is perceived to be much less common at these facilities. Treatment centres, which are institutions that provide specialized psychiatric services and mental health care to federal offenders, were also excluded from this study as they were included in a separate study. It should be noted that due to the method used to recruit participants for this study, prevalence of NSSI cannot be determined for the population of men who are federally incarcerated in Canada.

The study was piloted in the Ontario region at Collins Bay Institution (medium security) and Kingston Penitentiary (maximum security). The remaining data were collected from medium and maximum security institutions in each of the five regions across Canada (Atlantic, Quebec, Ontario, Prairies, and Pacific). This included the following institutions: Archambault Institution (medium security, Quebec region), Atlantic Institution (maximum security, Atlantic region), Donnacona Institution (maximum security, Quebec region), Dorchester Penitentiary (medium security, Atlantic region), Joyceville Institution (medium security, Ontario region), Kent Institution (maximum security, Pacific region), Kingston Penitentiary (maximum security, Ontario region), Mountain Institution (medium security, Pacific region), Saskatchewan Penitentiary (medium and maximum security, Prairie region), and Warkworth Institution (medium security, Ontario region). This represents nearly one-quarter of the federal institutions for male offenders in Canada.

The comparison group was matched on age, Aboriginal status, and date of admission to custody within each of the institutions studied. In total, 199 men participated in the study. Sample demographics and criminal profile are presented in Table 1. A snapshot of the federally sentenced incarcerated male population residing in medium and maximum institutions during March 2010 is provided for comparison ($N = 11,971$). The age of participants ranged from 19 to 67 ($M = 39.86$, $SD = 10.23$). The age of the population ranged from 17 to 93 ($M = 38.63$, $SD = 12.09$). Compared to the population, the study sample appears to have a slightly higher proportion of offenders who are Aboriginal, Caucasian, classified as maximum security, higher risk, higher need, and serving longer sentences for more violent offences. These differences are not surprising given the recruitment strategy for this study. Offenders with a file history of SIB were approached for voluntary participation in this study and, as mentioned above, a comparison group matched on a number of variables was also approached for participation. Evidence from previous studies (Power & Usher, in press) suggests that offenders with a history of NSSI are more likely to be classified as maximum security, serve longer sentences, and be higher risk and need.

The distribution of the sample by region is presented in Table 2, along with the comparison group. Offenders in the Atlantic and Pacific regions are somewhat overrepresented while offenders in the Ontario and Prairie regions are somewhat underrepresented. Although researchers visited each region for the same amount of time, the unique operational and security protocols of each institution resulted in a variable response rate across institutions.

Table 1

Demographic and Criminal Profile of Participants and Comparison Sample

	Total Study Sample % (n) (N = 199)	CSC's Male Offenders ¹ % (n) (N = 11,971)
Ethnicity ^a		
Aboriginal	25.4 (50)	21.9 (2,606) ²
Black	4.6 (9)	9.0 (1,064)
Caucasian	67.0 (132)	63.3 (7,455)
Other	3.0 (6)	6.3 (751)
Marital Status ^b		
Married or common law	38.7 (77)	38.5 (4,577) ³
Single, divorced, separated or widowed	59.8 (119)	61.5 (7,302)
Security Level ^c		
Maximum	31.8 (63)	17.2 (1,943) ⁴
Medium	64.6 (128)	70.7 (8,000)
Minimum	3.5 (7)	12.1 (1,367)
Major Admitting Offence ^c		
Homicide and manslaughter	33.8 (67)	27.6 (3,306)
Robbery	24.2 (48)	18.5 (2,214)
Drug offences	2.0 (4)	7.5 (902)
Assault	12.1 (24)	11.7 (1,398)
Sexual offences	8.1 (16)	12.0 (1,433)
Other violent offences	6.6 (13)	6.8 (810)

Table 1 (continued)

Demographic and Criminal Profile of Participants and Comparison Sample

	Total Study Sample % (<i>n</i>) (<i>N</i> = 199)	CSC's Male Offenders % (<i>n</i>) (<i>N</i> = 11,971)
Other non-violent offences	13.6 (27)	15.9 (1,908)
Risk Level ^a		
Low	3.0 (6)	5.4 (618) ⁵
Medium	22.8 (45)	30.5 (3,488)
High	74.1 (146)	64.2 (7,348)
Need Level ^a		
Low	3.0 (6)	2.8 (315) ⁶
Medium	13.2 (26)	27.4 (3,139)
High	83.8 (165)	69.8 (7,991)
Sentence Length ^c		
Less than 5 years	32.3 (64)	44.5 (5,332)
More than 5 years	32.8 (65)	29.5 (3,527)
Life	34.8 (69)	26.0 (3,112)

Note. Risk refers to static factors such as criminal history, offence severity, and probability of future re-offending. Need refers to dynamic factors that can change through intervention such as employment skills, substance abuse, and attitude. ¹ Correctional Service of Canada. (2011). Unpublished raw data of federally sentenced men in medium and maximum security during the month of March, 2010. Retrieved January 19, 2011 from Correctional Service of Canada Offender Management System.

^a *n* = 2 missing. ^b *n* = 3 missing. ^c *n* = 1 missing. ² *n* = 95 missing. ³ *n* = 92 missing. ⁴ *n* = 661 missing. ⁵ *n* = 517 missing. ⁶ *n* = 526

Table 2

Distribution of Sample and Comparison by Region

Region	Total Sample (<i>N</i> = 199) % (<i>n</i>)	CSC's Male Offenders ¹ (<i>N</i> = 11,971) % (<i>n</i>)
Atlantic	17.6 (35)	9.0 (804)
Quebec	23.6 (47)	23.4 (2,086)
Ontario	21.6 (43)	29.3 (2,614)
Prairies	17.1 (34)	23.1 (2,062)
Pacific	20.1 (40)	15.2 (1,353)

Note. ¹ Correctional Service of Canada. (2011). Unpublished raw data of federally sentenced men in medium and maximum security during the month of March, 2010. Retrieved January 19, 2011 from Correctional Service of Canada Offender Management System. *n* = 3,052 missing.

Measures

Semi-structured interview protocol. The interview questions used in this study were selected to assess information related to the research questions being studied, based on the research questions and findings in past literature. The interview addressed mental health status and history, history of abuse, history of suicide attempts, and history of NSSI. Questions were listed along with possible prompts or follow-up questions that could be used at the discretion of the interviewer. Length of the interview varied substantially between participants, ranging from 2 – 38 minutes. Participants were free to share as much or as little information as they wished. A copy of the semi-structured interview protocol can be found in Appendix A.

Structured Clinical Interview for DSM Axis I Disorders (SCID-I). Portions of the Structured Clinical Interview for DSM Axis I Disorders (SCID-I) were administered. The SCID-I is a semi-structured interview designed for making the major DSM-IV Axis I diagnoses (First, Spitzer, Gibbon, Williams, & Benjamin, 2007). The research version, used in the present study, was modified so that only the disorders related to the research questions were assessed. The SCID-I was used to assess Major Depressive Disorder, Dysthymic Disorder, Alcohol and Substance Abuse Disorders, Panic Disorder, Obsessive-Compulsive Disorder, Posttraumatic Stress Disorder, and Generalized Anxiety

Disorder.

The SCID-I is widely considered to be the “gold standard” for psychiatric diagnoses in research, and has been used with male and female populations in community, psychiatric, and offender populations (Fennig, Craig, Lavelle, Kovasznay, & Bromet, 1994; Steadman, Robbins, Islam & Osher, 2007; Trestman, Ford, Zhang, & Wiesbrock, 2007; Zanarini et al., 2000; Zanarini & Frankenburg, 2001). The SCID-I has been used in French with male and female psychiatric patients (Damsa et al., 2005) and male offenders (Daigle & Côté, 2002). Studies have found good to excellent validity and reliability ($\alpha = .61$ to $\alpha = 1.00$; Kappa scores of agreement on relevant axes were between .64 and 1.0) on the disorders relevant here (Zanarini et al., 2000; Zanarini & Frankenburg, 2001). In a psychiatric population ($N = 310$), the SCID-I compared favourably to diagnoses made by psychiatrists in terms of sensitivity (0.50-1.00), specificity (0.94-1.00) and agreement (kappa = 0.66 - 0.90) (Fennig, Craig, Lavelle, Kovasznay, & Bromet, 1994).

Structured Clinical Interview for DSM Axis II Disorders (SCID-II). The SCID-II is a semi-structured interview that was developed for the assessment of DSM Axis II (Personality) Disorders (First, Gibbon, Spitzer, & Williams, 1997). It is also considered a gold standard in terms of personality disorder diagnoses, and has been used with male and female offenders (Guy, Poythress, Douglas, Skeem, & Edens, 2008; Komarovskaya, Loper, & Warren, 2007; Ullrich et al., 2008). Only the portions of the SCID-II that assesses borderline personality disorder and antisocial personality disorder were administered. The interrater reliability of the SCID-II is moderate to excellent for borderline personality disorder (.48-.91) and antisocial personality disorder (0.41-.95; Dreesen & Arntz, 1998; First et al., 1995; Fogelson, Neuchterlein, Asarnow, Subotnik, & Talovic, 1991; Maffei, et al., 1997).

The Short Form Buss-Perry Aggression Questionnaire (BPAQ-SF). The Short Form Buss-Perry Aggression Questionnaire (BPAQ-SF) is a 12-item questionnaire based on the original 29-item Buss-Perry Aggression Questionnaire (Buss & Perry, 1992) that is widely used and cited. The short form was originally developed by Bryant and Smith (2001) and was modified and tested by Diamond, Wang, and Buffington-Vollum (2005). Items are rated on a Likert scale ranging from 1 (very unlike me) to 5 (very like

me). The BPAQ-SF has been validated on male and female offenders and confirmatory factor analyses supported the four-factor model proposed by Diamond et al. (2005): (1) Physical Aggression; (2) Verbal Aggression; (3) Anger; and (4) Hostility. Reliability for this version is good ($\alpha = .63$ to $\alpha = .73$). While several models have been proposed and tested for the subscale structure of this questionnaire, the structure supported for use with offenders will be used here (Diamond et al., 2005). In the present study, the reliability ranged from acceptable ($\alpha = .78$) to good ($\alpha = .88$). This questionnaire was translated into French for this study. For the French language version of the questionnaires, the internal consistency ranged from poor ($\alpha = .68$) to excellent ($\alpha = .90$).

Depression, Hopelessness & Suicide (DHS) Screening Form. The DHS was initially developed and subsequently tested on medium security male inmates in Canada (Mills & Kroner, 2004). The questionnaire has subscales for depression and hopelessness that are scored separately. Items are answered dichotomously (True or False). Internal consistency of the scales were found to be good using Cronbach's alpha ($\alpha = .82$ to $\alpha = .90$). For the present study, the internal consistency scores were excellent for the Depression and Hopelessness scale at $\alpha = .92$ and $\alpha = .90$, respectively. For the French Questionnaires, the reliability scores were excellent, with depression and hopelessness at $\alpha = .90$ and 0.87 respectively.

Brief COPE. The Brief COPE (Carver, 1997) is an abbreviated version of the COPE Inventory (Carver, Scheier & Weintraub, 1989) designed to assess coping strategies. The Brief COPE has 28 items rated on a four-point Likert scale from "I don't do this at all" to "I do this a lot". The following subscales can be derived from the questionnaire: 1) self-distraction; 2) active coping; 3) denial; 4) substance use; 5) use of emotional support; 6) use of instrumental support; 7) behavioral disengagement; 8) venting; 9) positive reframing; 10) planning; 11) humor; 12) acceptance; 13) religion; 14) self-blame. There is no total score for this questionnaire. The subscales have internal consistency scores ranging from acceptable ($\alpha = .50$) to excellent ($\alpha = .90$). In the present study, there were a broad range of internal consistency scores from $\alpha = .50$ to $\alpha = .89$. Given that each subscale is composed of only two items, this range of scores is not surprising. Only four scales had scores of less than $\alpha = .60$. For the French questionnaires, there were a broad range of internal consistency scores from poor ($\alpha = -$

.01) to good ($\alpha = .79$).

Childhood Trauma Questionnaire (CTQ). The CTQ is a 28-item self-report questionnaire that screens for childhood histories of abuse and neglect (Bernstein & Fink, 1998). All items are rated on a five-point Likert scale from “Never True” to “Very Often True”. The inventory assesses three types of abuse (emotional, physical and sexual) and two types of neglect (emotional and physical). Each of these five types of maltreatment is assessed with five items. An individual score is tabulated for each of the subscales, which have been validated by confirmatory factor analysis (Bernstein et al., 2003). The measure has been validated on numerous populations of both genders and various ethnic backgrounds, including psychiatric patients, chronic pain patients, college students, and offenders. The subscales have internal consistency scores ranging from satisfactory ($\alpha = .66$) to excellent ($\alpha = .92$). Test-retest reliability scores are high ($r = .79$ to $.86$). For the French version (Paquette, Laporte, Bigras, & Zoccolillo, 2004) the psychometrics are similar to the English version, with internal consistency scores ranging from satisfactory ($\alpha = .68$) to excellent ($\alpha = .90$). Test-retest reliability scores are also high ($r = .68$ to $.90$). In the present study, Cronbach’s alpha scores for internal consistency ranged from $.78$ to $.95$ on the abuse and neglect subscales. For the Minimization scale, the alpha score was $.81$. For the French questionnaires, Cronbach’s alpha scores ranged from $.81$ to $.94$ on the abuse and neglect subscales. For the Minimization scale, $\alpha = .83$.

Brief Symptom Inventory (BSI). The BSI is a 53-item self-report questionnaire that assesses nine dimensions of psychological distress (Derogatis, 1993). Items are rated on a five-point Likert scale from 0 (not at all) to 4 (extremely). The nine symptom dimensions measured by this inventory are: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. The BSI also includes three indices of global distress: Global Severity Index, Positive Symptom Distress Index, and Positive Symptom Total. These global indices measure current or past level of symptomatology, intensity of symptoms, and number of reported symptoms. Internal consistency reliability is reported as good, ranging from $.73$ on the Psychoticism and Paranoia dimensions to $.88$ on the Anxiety dimension. The GSI had strong internal consistency reliability with a Cronbach’s alpha coefficient of $.97$ (Derogatis, 1993). Good internal consistency reliability is supported by

several other independent studies (Croog et al., 1986; Aroian & Patsdaughter, 1989 in Derogatis, 1993). Test-retest reliability for the nine symptom dimensions ranges from .68 (Somatization) to .91 (Phobic Anxiety), and for the three Global Indices from .87 to .90 (Derogatis, 1993). For the present study, internal consistency scores ranged from $\alpha = .75$ to $\alpha = .88$. For the French language version of the questionnaires, internal consistency ranged from $\alpha = .80$ to $\alpha = .94$.

The Offender Self-Injurious Behaviour Inventory (OSIBI). The OSIBI was developed to gather information on SIB in offenders, particularly motivations for NSSI, onset of NSSI, and the effects of incarceration. Additionally, sexual orientation and behaviour were assessed on this measure. In the women's study, sexual orientation and behaviour were assessed in the semi-structured interview, but it was decided that men might be more amenable to this question in a written format. The OSIBI does not contain subscales, and therefore measures of internal reliability cannot be calculated. Concurrent validity was assessed as moderate to high in previous studies (Power & Usher, in press). A copy of the OSIBI can be found in Appendix B.

Archival Data. Archival data were retrieved from the Offender Management System (OMS), which includes the Offender Intake Assessment (OIA) database. The OMS is an automated database used by CSC to manage information on federal offenders. Data contained in the OMS include demographic information, incident reports, institutional program participation, institutional employment records, and psychological reports.

The OIA database contains data collected when an offender is initially introduced to the federal correctional system. It is comprised of two core components: the Assessment of Static Factors, which emphasizes historical factors such as criminal history, offence severity, sex offence history and the probability of future re-offending (referred to here as Risk); and the Dynamic Factor Identification and Analysis (DFIA), which includes an assessment of factors or needs that can change through intervention, such as employment skills, substance abuse, and attitude (referred to here as Need). Each of the seven individual need domains is rated on a three point scale from low to high. Based on an analysis of these results, parole officers at Intake make a rating for overall need level, also rated on a three point scale from low to high. An assessment of the static

risk factors leads to an overall assessment of Risk level from low to high. The overall risk rating applies to all offenders including women offenders as well Aboriginal offenders.

The CPIC records provide a complete history of criminal charges, convictions, and dispositions for all Canadian offenders. Some of the data in this study were obtained through OIA and CPIC data, such as criminal history and risk and need levels.

Impulsivity Indicators. Due to the length of the protocol, impulsivity was measured by a selection of criteria from the DFIA in lieu of an additional impulsivity questionnaire. Fourteen items that most closely reflect impulsivity were chosen and used to create a continuous scale. Each item is rated dichotomously (1 = yes; 0 = no), yielding a possible total score ranging from 0 to 14. When comparing these indicators to the Barratt Impulsivity Scale in a sample of women offenders (see Power & Usher, in press), a moderate correlation was found ($r = .48, p < .001$). A list of DFIA items included in this impulsivity scale can be found in Appendix C.

Procedure/Analytic Approach

Two researchers attended each institution for a period of five to ten days to recruit participants and collect data. Thirty-two men chose to participate in French. Methods for recruitment and collection were modified to accommodate each institution. For each institution, a list of offenders with a history of self-injury was obtained, based on indicators found in OMS. A comparison group of offenders without a documented history of self-injury was then created and matched on age, date of admission, and aboriginal status. If an offender was subsequently identified as having a history of NSSI that had not been on the file, he was removed from the comparison group and added to the NSSI group. The offenders were listed in random order, and individuals on these lists were approached in order as much as possible and given the opportunity to voluntarily participate in the study. However, offenders on the list were not always available to participate in the study for a variety of reasons, such as being transferred out of the institution, attending programs or work, and health-related reasons. Therefore, some of the men on the list could not be asked to participate. Interviews took place in private rooms within the institution to ensure confidentiality.

No incentive or compensation was given in return for participation. Participants were provided with a verbal summary of the informed consent, along with a written form that had to be signed in order to participate. Participants were free to withdraw from the study at any time.

Interviews were recorded when participants consented. These interviews were recorded using a digital recorder and then transcribed verbatim by a professional transcription firm. If the men preferred not to be recorded, notes were taken on their responses. In total, three participants choose not to be recorded.

NSSI, Suicide Attempts, and Comparison Groups. Participants were assigned to two groups: those who had engaged in NSSI and those who had never engaged in NSSI. Group membership was determined by a combination of interview and questionnaire data (the question on the OSIBI that read “Have you ever injured yourself without trying to kill yourself?”). In 83.9% of cases ($n = 167$) both types of data were available and in agreement.

Five cases did not have semi-structured interview data, and therefore their group membership was determined based solely on their questionnaire data. Eighteen cases did not have the relevant questionnaire data, and therefore their interview data were used to determine group membership.

In nine cases, there was a discrepancy between the questionnaire data and interview data. In these cases, group membership was determined based on questionnaire data. This decision was made based on the detail provided in subsequent items on the questionnaire that asked about such issues as motivations and types of NSSI. The detail provided suggested that these participants were simply uncomfortable discussing these behaviours in interviews and thus the paper-and-pencil version was more likely to be a true representation of their behaviour.

The same process was undertaken to ascertain whether the men had ever attempted suicide. Group membership was determined by a combination of interview and questionnaire data (the question on the OSIBI read, “Have you ever *actually tried* to kill yourself?”). In 86.4% of cases ($n = 172$) both types of data were available and in agreement. Five cases did not have semi-structured interview data, and therefore their group membership was determined based solely on their questionnaire data. Seventeen

cases did not have the relevant questionnaire data, and therefore interview was used to determine group membership. In five cases, there was a discrepancy between the questionnaire data and interview data. In these cases, group membership was determined based on questionnaire data. Additionally, these data were used to determine who had engaged in both behaviours in the past.

Statistical techniques. Chi-square tests were used to assess differences in the distribution of frequencies, usually between those with and without a history of NSSI. t-tests were used to assess differences in means between groups. Bonferroni corrections were used to reduce the likelihood of error when a series of tests were conducted. This approach is used when multiple tests are being conducted in order to reduce the likelihood that results will be found significant by chance. Thus, when significant results are listed in the text, they are based on the Bonferroni-adjusted cut-offs.

Path analysis. Path analysis, an extension of multiple regression, was used to assess the proposed trajectories to NSSI. Path analysis has often been applied to examine the links between childhood and adult experiences and offending (Belknap, 2007). It can be used to evaluate causal hypotheses, and in some limited situations it can be used to test between two or more causal hypotheses, but it cannot establish the direction of causality (Webley & Lea, 1997). Using path analysis, trajectories to NSSI can be proposed and tested, although the data will be correlational in nature and therefore true causality cannot be determined. The temporal order of variables in the models is determined by the author based heavily on prior research and theory. The principle advantage of path analysis is that it can be used to estimate the magnitude and significance of hypothesized causal connections among sets of variables (Webley & Lea, 1997).

Missing data. All data were examined for data entry errors and missing data. Five participants had SCID and questionnaire data but did not have semi-structured interview data due to technical problems with the recordings. These participants were retained, as there was enough information to determine their history of SIB

Two participants responded that they engaged in NSSI on the questionnaire but it was determined during the interview that they did not actually self-injure, and therefore their questionnaire data was dropped for the OSIBI (i.e., the information provided in the OSIBI was determined to be invalid for these participants). One participant responded on

the OSIBI that he did not self-injure but it was determined in the interview that he did actually engage in NSSI, and so this participant's data is also missing for the OSIBI. In addition, other questionnaires were skipped in their entirety or so much of the data were skipped that the questionnaire was unusable. Fourteen participants were missing one or two questionnaires in this manner.

Results

Based on the interview and questionnaire data, it was determined that almost two-thirds of the participants had previously engaged in some form of SIB (i.e., at least one incident of NSSI or a suicide attempt in their past), as illustrated in Tables 3. Nearly half of the participants had attempted suicide (48.7%) and more than half (52.3%) had engaged in NSSI. Of those who had engaged in NSSI, 67.3% had also attempted suicide. Note that these frequencies reflect the study's sampling procedures and are not indicative of prevalence rates of these behaviours in the male offender population. It is important to note that while NSSI and suicide attempts are different behaviours, these behaviours are correlated.

Table 3

History of Non-Suicidal Self-Injury and Suicide Attempts in the Sample

	<i>N</i> = 199
	% (<i>n</i>)
At least one suicide attempt or non-suicidal self-injury incident ever	65.8 (131)
At least one incident of non-suicidal self-injury ever	52.3 (104)
At least one suicide attempt ever	48.7 (97)
Suicide attempts only (no non-suicidal self-injury)	13.6 (27)
Non-suicidal self-injury only (no suicide attempts)	17.1 (34)
Both suicide attempt and non-suicidal self-injury	35.2 (70)

For most analyses, the participants were separated into two groups: those with a history of NSSI and those without a history of NSSI. In Table 4, demographic and criminogenic variables are outlined for each of these two groups. Chi-square tests were conducted to assess the differences between those with and without a history of NSSI on each variable.

After applying the Bonferroni correction ($p = .05/7 = 0.0071$), results indicated that men with a history of NSSI were significantly more likely to have ratings on overall need ($p = .00073$). The average age of participants with a history of NSSI ($M = 38.42$,

$SD = 9.99$) was significantly younger than those without a history of NSSI ($M = 41.42$, $SD = 10.36$; $t(196) = 2.07$, $p = .040$). There were no significant differences between groups with respect to ethnicity, marital status, major admitting offence, or sentence length. Notably, while there were more Aboriginal men in the group with a history of NSSI compared to those without a history of NSSI, this difference was not statistically significant.

Table 4

Demographic and Criminal Profile of Participants by History of NSSI

	NSSI (<i>N</i> = 104) % (<i>n</i>)	No NSSI (<i>N</i> = 95) % (<i>n</i>)	χ^2
Ethnicity ^a			
Aboriginal	29.4 (30)	21.5 (20)	
Black	4.9 (5)	4.3 (4)	2.78
Caucasian	65.7 (67)	69.9 (65)	
Other	1.0 (1)	5.4 (5)	
Marital Status ^b			
Married or Common Law	33.3 (34)	45.7 (43)	3.16
Single, Divorced, Separated or Widowed	66.7 (68)	54.3 (51)	
Need Level ^a			
Low	1.0 (1)	5.3 (5)	
Medium	4.9 (5)	22.3 (21)	14.43***
High	94.2 (97)	72.3 (68)	
Risk Level ^a			
Low	1.9 (2)	4.3 (4)	2.45
Medium	18.4 (19)	27.7 (26)	
High	79.6 (82)	68.1 (64)	
Major Admitting Offence ^c			
Homicide and Manslaughter	29.1 (30)	38.9 (37)	
Robbery	27.2 (28)	20.0 (19)	
Drug Offences	0.00 (0)	4.2 (4)	
Assault	14.6 (15)	9.5 (9)	9.67
Sexual Offences	9.7 (10)	6.3 (6)	
Other Violent Offences	7.8 (8)	5.3 (5)	
Other Non Violent Offences	11.7 (12)	15.8 (15)	

Table 4 (continued)

	NSSI (<i>N</i> = 104) % (<i>n</i>)	No NSSI (<i>N</i> = 95) % (<i>n</i>)	χ^2
Security Level ^c			
Maximum	37.9 (39)	25.3 (24)	
Medium	59.2 (61)	70.5 (67)	2.91
Minimum	2.9 (3)	4.2 (4)	
Sentence Length ^c			
Less than 5 years	32.0 (33)	32.6 (31)	
More than 5 years	33.0 (34)	32.6 (31)	0.01
Life	35.0 (36)	34.7 (33)	

Note. NSSI = Non-suicidal self-injury.^a *n* = 2 missing. ^b *n* = 3 missing. ^c *n* = 1 missing.
* *p* < .05 ***p* < .01 ****p* < .001.

Participants completed several questionnaires that assessed factors thought to be associated with NSSI. t-tests were conducted to assess mean differences between those with and without a history of NSSI on each measure (see Table 5). After applying the Bonferroni correction for multiple comparisons ($p = .05/36 = 0.0014$), participants who had a history of NSSI scored significantly higher on measures of depression, anxiety, paranoia, hostility, anger, overall aggression, and all forms of abuse and neglect. With respect to coping styles, significant differences between groups were found for the self-distraction, denial, behavioural disengagement, and venting subscales, but only self-distraction and venting subscales remained statistically significant after applying the Bonferroni correction.

Participants were also assessed on levels of impulsivity, which is thought to be associated with NSSI. Men with a history of NSSI had significantly higher ratings of impulsivity than those who did not engage in NSSI.

Table 5

A Comparison of Participants With and Without a History of NSSI on Questionnaire Data

Measures	NSSI (Mean (SD))	No NSSI Mean (SD)	<i>t</i>
Depression, Hopelessness, and Suicide Scale	<i>N</i> = 98	<i>N</i> = 92	
Depression	8.46 (5.37)	3.34 (3.55)	-7.80***
Hopelessness	3.40 (3.30)	1.27 (2.13)	-5.29***
Buss-Perry Aggression Questionnaire	<i>N</i> = 98	<i>N</i> = 90	
Physical Aggression	12.55 (5.13)	9.74 (4.49)	-3.98***
Verbal Aggression	9.23 (3.45)	6.88 (2.97)	-5.00***
Anger	5.66 (2.82)	3.63 (2.06)	-5.67***
Hostility	8.87 (3.83)	6.20 (3.04)	-5.32***
Total	36.32 (13.08)	26.45 (9.91)	-5.86***
Childhood Trauma Questionnaire	<i>N</i> = 98	<i>N</i> = 89	
Emotional Abuse	16.02 (5.87)	10.79 (5.72)	-6.17***
Physical Abuse	15.03 (6.29)	10.28 (5.78)	-5.35***
Sexual Abuse	14.06 (7.32)	9.31 (6.77)	-4.59***
Emotional Neglect	16.28 (6.11)	12.19 (6.08)	-4.59***
Physical Neglect	12.69 (5.18)	9.52 (4.69)	-4.38***
Brief Symptom Inventory	<i>N</i> = 98	<i>N</i> = 88	
Somatization	5.80 (5.85)	2.26 (3.81)	-4.93***
Obsessive-Compulsive	7.99 (6.23)	3.56 (3.98)	-5.84***
Interpersonal Sensitivity	4.08 (4.18)	1.75 (2.43)	-4.70***
Depression	8.37 (6.13)	3.35 (4.01)	-6.67***
Anxiety	6.57 (5.51)	2.25 (3.10)	-6.68***
Hostility	6.00 (5.23)	2.34 (3.17)	-5.83***
Phobic Anxiety	3.46 (4.28)	1.02 (2.12)	-5.00***
Paranoid Ideation	6.51 (5.02)	3.76 (3.82)	-4.23***
Psychoticism	5.91 (4.73)	2.33 (3.15)	-6.12***
Global Severity Index	1.03 (0.74)	0.44 (0.43)	-6.76***
Positive Symptom Distress Index	2.00 (0.75)	1.59 (0.69)	-3.85***

Table 5 (continued)

Measure	NSSI	No NSSI	<i>t</i>
	Mean (<i>SD</i>)	Mean (<i>SD</i>)	
Brief COPE	<i>N</i> = 99	<i>N</i> = 91	
Self-Distraction	5.77 (1.62)	4.89 (1.84)	-3.50***
Active Coping	6.19 (1.72)	6.59 (1.41)	1.75
Denial	3.34 (1.54)	2.87 (1.43)	-2.18*
Substance Use	3.42 (2.09)	2.92 (1.62)	-1.86
Emotional Support	5.03 (2.07)	4.89 (1.99)	-0.47
Instrumental Support	5.38 (2.03)	5.02 (1.61)	-1.35
Behavioural Disengagement	3.29 (1.40)	2.81 (1.40)	-2.40*
Venting	4.85 (1.63)	4.04 (1.73)	-3.31**
Postive Reframing	5.59 (1.72)	5.64 (1.71)	0.22
Planning	6.06 (1.74)	6.20 (1.62)	0.55
Humour	3.81 (1.87)	3.60 (1.76)	-0.79
Acceptance	6.42 (1.60)	6.34 (1.56)	-.36
Religion	4.71 (2.42)	4.21 (2.15)	-1.50
Self-Blame	5.35 (1.87)	4.52 (1.78)	-3.10**
Impulsivity	<i>N</i> = 58	<i>N</i> = 58	
	8.35 (2.50)	6.28 (2.76)	-4.23***

Note. NSSI = Non-suicidal self-injury. Items marked *** are significant after Bonferroni correction ($p = .0014$)

* $p < .05$ ** $p < .01$ *** $p < .001$.

Mental Health

Mental health was assessed using modules from the Structured Clinical Interviews for Diagnosis of Axis I and II disorders (SCID-I and SCID-II). Table 6 presents the number of men in each group who met the SCID criteria for each disorder that was assessed. The number of participants who met the criteria for any disorder was calculated, both including and excluding the alcohol and substance use modules because of the extremely high rates of these disorders in the study population. Chi-square tests were used to determine if the groups differed significantly on the rate to which they reached the

criteria for these disorders. After applying the Bonferroni correction for multiple comparisons ($p = .05/12 = 0.004$), it was found that participants in the NSSI group were significantly more likely to meet the criteria for any disorder, particularly substance abuse, major depressive disorder, posttraumatic stress disorder, and borderline personality disorder. Those with a history of NSSI were also more likely to meet the criteria for antisocial personality disorder and panic disorder, but these relationships were not statistically significant after applying the Bonferroni correction.

Mental health was also assessed in the semi-structured interview as a means of uncovering presence of lifetime psychological diagnoses. Men were asked to report any psychological disorders they had ever received. Only diagnoses that the men reported receiving from a physician or mental health professional were included. These data are presented in Table 7. After applying the Bonferroni correction ($p = .05/12 = 0.004$), men with a history of NSSI were significantly more likely to have ever been diagnosed with any psychological disorder (74%) compared to those without a history of NSSI (34%). Those with a history of NSSI were also more likely to have depression, bipolar, attention-deficit hyperactivity disorder, schizophrenia, and other personality disorders; however, these associations were no longer significant after applying the Bonferroni correction. These results are fairly consistent with those found with the SCID, in that participants with a history of NSSI were more likely to have been diagnosed with any psychological disorder both historically and currently. Posttraumatic stress disorder, borderline personality disorder, antisocial personality disorder, and substance abuse disorders were found to be more common in the NSSI group as measured by the SCID, which conflicts somewhat with results from the semi-structured interview. This may be due to the fact that the SCID measures any past or current depressive symptoms, while the interview was intended to capture historic diagnoses, or it could be explain by the fact that though the men were exhibiting symptoms of a psychological disorder but had never been formally diagnosed.

Table 6

A Comparison of Participants With and Without a History of NSSI on Mental Health Categories based on SCID Data

	NSSI	No NSSI	
	% (<i>n</i>)	% (<i>n</i>)	
	<i>N</i> = 104	<i>N</i> = 95	χ^2
Criteria met for any disorder	99.0 (103)	87.4 (83)	11.07***
Criteria met for any disorder other than alcohol or substance abuse or dependence	92.3 (96)	72.6 (69)	13.57***
Major depressive disorder (current or past)	63.5 (66)	21.1 (20)	36.39***
Dysthymic disorder	3.8 (4)	3.2 (3)	0.02
Alcohol abuse or dependence	79.8 (83)	53.7 (51)	15.41***
Non-alcohol substance abuse or dependence	84.6 (88)	62.1 (59)	13.03***
Panic disorder	17.3 (18)	6.3 (6)	5.66*
Obsessive-compulsive disorder	8.6 (9)	5.3 (5)	0.87
Posttraumatic stress disorder	37.5 (39)	9.5 (9)	21.31***
Generalized anxiety disorder	10.6 (11)	5.3 (5)	1.90
Antisocial personality disorder	77.9 (81)	56.8 (54)	10.08**
Borderline personality disorder	41.3 (43)	7.4 (7)	30.47***

Note. NSSI = Non-suicidal self-injury. SCID = Structured Clinical Interview for Diagnosis of Axis I and Axis II Disorders.

* $p < .05$ ** $p < .01$ *** $p < .001$.

Table 7

A Comparison of Participants With and Without a History of NSSI on Mental Health Diagnoses Based on Interview Data

Disorder Assessed by Interview	NSSI	No NSSI	χ^2
	% (<i>n</i>) <i>N</i> = 98	% (<i>n</i>) <i>N</i> = 90	
Ever diagnosed with a psychological disorder	73.5 (72)	34.4 (31)	28.84***
Depression	12.2 (12)	3.3 (3)	5.08*
Attention-deficit hyperactivity disorder	18.4 (18)	7.8 (7)	4.56*
Bipolar	17.3 (17)	5.6 (5)	6.31*
Substance abuse disorder	3.1 (3)	1.1 (1)	0.18
Schizophrenia	14.3 (14)	3.3 (3)	6.84**
Anxiety disorder (including obsessive-compulsive disorder)	7.1 (7)	3.3 (3)	0.70
Posttraumatic stress disorder	7.1 (7)	3.3 (3)	0.70
Borderline personality disorder	7.1 (7)	2.2 (2)	1.53
Antisocial personality disorder	14.3 (14)	6.7 (6)	2.87
Other personality disorder	9.2 (9)	2.2 (2)	4.13*
Impulse control disorder	3.1 (3)	1.1 (1)	0.18

Note. NSSI = Non-suicidal self-injury.

* $p < .05$ ** $p < .01$ *** $p < .001$.

Experience of a Head Injury

Experience of a head injury was assessed during the semi-structured interview where men were asked to report if they had ever experienced a head injury where they lost consciousness or required stitches. Prior experience of head trauma has been linked to NSSI in prior research (Hillbrand, Krystal, Sharpe, & Foster, 1994; Lanes, 2009). Eighty-five percent ($n = 80$) of men in the NSSI group reported a prior incident of head trauma, compared to 78% ($n = 55$) of those without a history of NSSI (data was unavailable for 34 participants). This difference was not significant ($\chi^2(1) = 1.22, p = .270$) therefore experience of a head injury was not found to be associated with NSSI in this sample.

Sexual Behaviour and Orientation

On the questionnaires participants were asked about their sexual orientation (i.e., how they self-identified), as well as their sexual behaviour before and after being admitted to the institution. Where possible, chi-square tests were conducted to assess the differences between those with and without a history of NSSI on each variable. These data are presented in Table 8. Results indicate no association between sexual orientation or behaviour and history of NSSI.

Table 8

Sexual Orientation and Behaviour of Participants With and Without a History of NSSI

	NSSI	No NSSI	
	% (n)	% (n)	χ^2
Sexual orientation	<i>N</i> = 88	<i>N</i> = 67	
Heterosexual	88.6 (78)	89.6 (60)	
Homosexual	2.3 (2)	3.0 (2)	0.12
Bisexual	6.8 (6)	6.0 (4)	
Other	2.3 (2)	1.5 (1)	
Sex with male before admitted to institution	<i>N</i> = 89	<i>N</i> = 66	
Yes	16.9 (15)	13.6 (9)	0.30
No	83.1 (74)	86.4 (57)	
Sex with male after admitted to institution	<i>N</i> = 89	<i>N</i> = 67	
Yes	12.4 (11)	4.5 (3)	2.91
No	87.6 (78)	95.5 (64)	
Sex with female before admitted to institution	<i>N</i> = 89	<i>N</i> = 67	
Yes	98.9 (88)	98.5 (66)	0.27
No	1.1 (1)	1.5 (1)	
Sex with female after admitted to institution	<i>N</i> = 87	<i>N</i> = 67	
Yes	25.3 (22)	26.9 (18)	0.05
No	74.7 (65)	73.1 (49)	

Note. NSSI = Non-suicidal self-injury.

p* < .05 *p* < .01 ****p* < .001.

Trajectories to NSSI

Childhood Abuse Model. The Childhood Abuse Model proposes that the experience of childhood sexual abuse leads to psychological disorders such as substance abuse, depression, posttraumatic stress disorder, and borderline personality disorder, which in turn lead to NSSI (see Figure 1). Table 9 presents the bivariate correlations for the variables in this model. The Sexual Abuse subscale on the CTQ was used as an indicator of childhood sexual abuse. Depression was measured by meeting the criteria for current or past major depressive disorder on the SCID. The SCID criteria were also used for posttraumatic stress disorder, borderline personality disorder, and substance abuse. NSSI was found to be significantly correlated with childhood sexual abuse, depression, posttraumatic stress disorder, borderline personality disorder, and substance abuse ($p < .001$).

Table 9

Bivariate Correlations for the Childhood Abuse Model

	NSSI	Childhood Sexual Abuse	Depression	PTSD	BPD	Substance Abuse
NSSI	--	0.32***	0.43***	0.33***	0.41***	0.29***
Childhood Sexual Abuse		--	0.19*	0.31***	0.34***	0.20**
Depression			--	0.29***	0.32***	0.25***
PTSD				--	0.43***	0.10
BPD					--	0.18*
Substance Abuse						--

Note. NSSI = Non-suicidal self-injury. PTSD = Posttraumatic stress disorder. BPD = borderline personality disorder.

* $p < .05$ ** $p < .01$. *** $p < .001$

Path analysis. The path model was estimated using a series of linear regression analyses, progressing from left to right in the model. Results presented in the model

(Figure 1) are the range of standardized regression coefficients (beta weights). Initially, five regression analyses were conducted using childhood sexual abuse as the predictor variable and depression, posttraumatic stress disorder, borderline personality disorder, substance abuse, and NSSI each as the outcome variables (Table 10). Subsequently a regression analysis was conducted with four predictor variables (depression, posttraumatic stress disorder, borderline personality disorder, and substance abuse) and one dependent variable (NSSI; see Table 11). All paths were significant with the exception of the relationship between posttraumatic stress disorder and NSSI.

Table 10

Simple Regression Results for Childhood Sexual Abuse Predicting Non-Suicidal Self-Injury, Depression, Posttraumatic Stress Disorder, Borderline Personality Disorder and Substance Abuse

	Beta Weight	B	SE	F	R ²
Non-suicidal self-injury	0.323***	0.022	0.005	21.24***	0.105
Depression	0.187*	0.012	0.005	6.62***	0.035
Posttraumatic stress disorder	0.310***	0.018	0.004	19.30***	0.096
Borderline personality disorder	0.337***	0.020	0.004	23.26***	0.113
Substance abuse	0.200**	0.010	0.004	7.57**	0.040

Note. Predictor variable is childhood sexual abuse in each case.

* $p < .05$ ** $p < .01$ *** $p < .001$.

Table 11

Standard Multiple Regression Results: Regressing Non-Suicidal Self-Injury on Depression, Posttraumatic Stress Disorder, Borderline Personality Disorder, and Substance Abuse

	Beta Weight	B	SE	F	R ²
Depression	0.280***	0.282	0.069	--	--
Posttraumatic stress disorder	0.137	0.160	0.082	--	--
Borderline personality disorder	0.232**	0.266	0.081	--	--
Substance abuse	0.168**	0.234	0.090	--	--
Model	--	--	--	20.23***	0.311

Note. Outcome variable is non-suicidal self-injury in each case

* $p < .05$. ** $p < .01$. *** $p < .001$

.323***

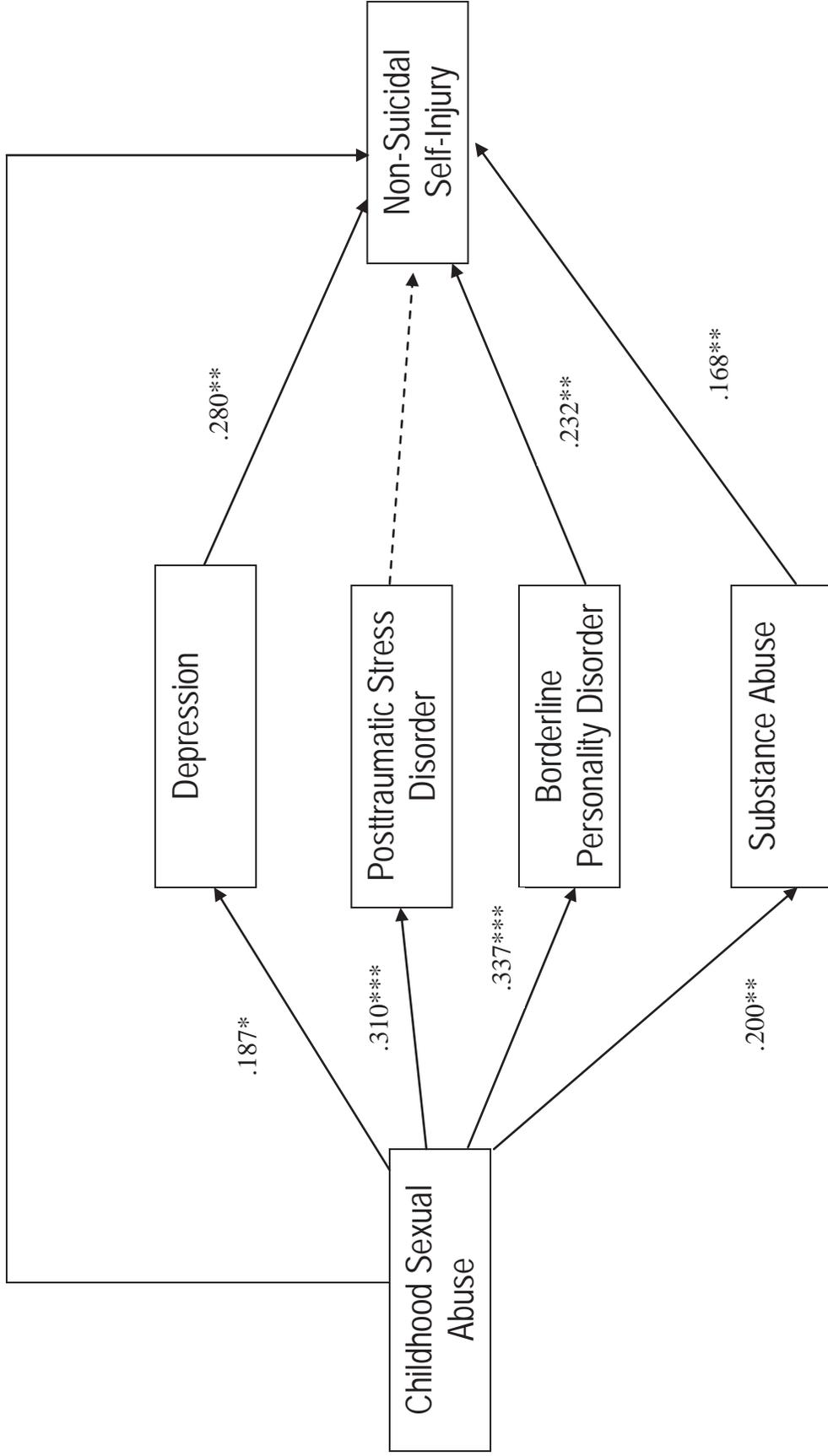


Figure 1. The Childhood Abuse Model. Numbers are the range of standardized regression coefficients (beta weights). Paths that are significant at $p < .05$ are shown with a solid line. Non-significant paths are shown with a dashed line. * $p < .05$, ** $p < .01$, *** $p < .001$.

Impulsivity/Anger/Aggression Model. Table 12 presents the bivariate correlations for the variables in this model (impulsivity, anger, aggression, and NSSI). Aggression was calculated based on the combination of the Physical Aggression and Verbal Aggression subscales of the BPAQ. The Anger subscale on the BPAQ was used for the Anger variable, and the impulsivity scale created from DFIA indicators were used for the Impulsivity variable. All three scales were correlated with NSSI at the $p < .001$ level. Impulsivity, Anger, and Aggression were all inter-correlated at the $p < .05$, $p < .01$ or $p < .001$ level.

Table 12

Bivariate Correlations for the Impulsivity/Anger/Aggression Model

	NSSI	Impulsivity	Anger	Aggression
1. NSSI	--	0.35***	0.37***	0.33***
2. Impulsivity		--	0.21*	0.29**
3. Anger			--	0.77***
4. Aggression				--

Note. NSSI = Non-suicidal self-injury.

* $p < .05$ ** $p < .01$ *** $p < .001$.

Path analysis. The path model was estimated using a series of linear regression analyses (see Table 13). Results presented in the model (Figure 2) are the standardized regression coefficients (beta weights). While anger, aggression, and impulsivity were all predictive of each other, only anger and impulsivity were directly related to NSSI. Thus, there is partial support for the Anger/Impulsivity/Aggression Model.

Table 13

Standard Multiple Regression Results: Regressing Non-Suicidal Self-Injury on Impulsivity, Anger, and Aggression

	Beta Weight	B	SE	F	R ²
Impulsivity	0.280**	0.050	0.015	--	--
Anger	0.568***	0.105	0.024	--	--
Aggression	-0.158	-0.010	0.009	--	--
Model	--	--	--	17.08***	0.326

Note. Outcome variable is non-suicidal self-injury.

* $p < .05$. ** $p < .01$. *** $p < .001$.

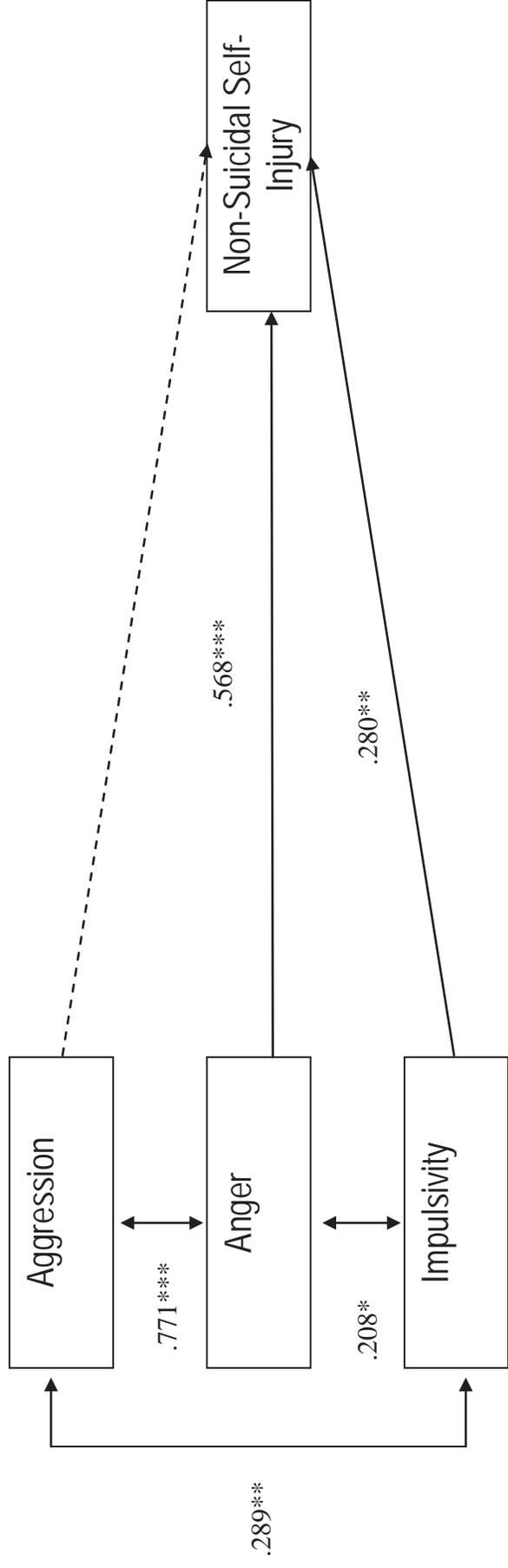


Figure 2. The Impulsivity/Anger/Aggression Model. Numbers are the range of standardized regression coefficients (beta weights). Paths that are significant at $p < .05$ are shown with a solid line. Non-significant paths are shown with a dashed line. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Discussion

The study improves our understanding of the NSSI in federally sentenced men. Ninety-five men with a history of NSSI were compared to 104 men who did not have this history with respect to mental health, coping styles, substance abuse, and history of abuse was provided. Possible trajectories to this behaviour were also explored.

NSSI and Suicide Attempts

Sixty-seven percent of men who had engaged in NSSI had also attempted suicide. Other studies have found similar rates of co-occurrence, with estimates ranging from 55% to 85% (Fyer et al., 1988; Stone, 1990). Notably, 67% is very close to the 70% figure recently found in a study of federally sentenced women CSC (Power & Usher, in press). While these behaviours were highly correlated, suicide attempts and NSSI were found to be distinct behaviours, with suicide attempts reported to be undertaken with a desire to end one's life and NSSI reported to be undertaken for other reasons, such as coping. This same result was found in the study of NSSI among federally sentenced women. This differentiation has important implications in terms of treatment and prevention, since behaviours that have different motivations and origins likely need to be addressed with unique methods.

Mental Health

Men in the NSSI group were significantly more likely to meet the criteria for borderline personality disorder than those without any history of this behaviour, with 41% of participants with a history of NSSI meeting the criteria for borderline personality disorder versus only 7% of the comparison group. An association between NSSI and borderline personality disorder was expected given that NSSI is a criterion for borderline personality disorder diagnosis. This finding is consistent with other studies (Andover et al., 2005; Klonsky et al., 2003; Young et al., 2006), although most research in this area has focused on women. However, prevalence rates of borderline personality disorder are also high among male offenders, ranging from rates of 19% to 57% (Black et al., 2007; Blackburn & Coid, 1999; Singleton et al., 1997), thus a relationship between NSSI and borderline personality disorder among the men in this study is not surprising.

NSSI was found to be significantly correlated with posttraumatic stress disorder, although posttraumatic stress disorder was not a significant predictor of NSSI in the Childhood Abuse Model. Thus, while there does appear to be some relationship between childhood abuse and posttraumatic stress disorder, posttraumatic stress disorder does not significantly predict NSSI even though they are correlated. A relationship between NSSI and posttraumatic stress disorder was anticipated, given the large number of studies that have found a significant relationship (e.g., Albach & Everaerd, 1992; Kisiel & Lyons, 2001; Prinstein et al., 2009; Salina, Lesondak, Razzano, & Weilbaecher, 2007; Weaver, Cahrd, Mechanic, & Etzel, 2004; Weierich & Nock, 2008; Zlotnick et al., 1999). However, previous research on federally sentenced women in Canada found no significant relationship between posttraumatic stress disorder and NSSI (Power & Usher, in press).

Participants who engaged in NSSI were more likely to meet the criteria for major depressive disorder and scored higher on the depression scale of the Depression, Hopelessness, and Suicide Screening Form. This is consistent with other studies, in community and forensic populations (Andover et al., 2005; Darche, 1990; Klonsky et al., 2003; Roe-Sepowitz, 2007; Ross & Heath, 2002), including studies involving NSSI among federally sentenced women in Canada (Power & Usher, in press).

Substance abuse may be an important risk factor for NSSI. Those who had a history of NSSI were found to be significantly more likely to meet the criteria for substance abuse disorders on the SCID. This finding is concordant with other research that has found that individuals with substance abuse disorders are also more likely to engage in NSSI (Borrill et al., 2003; Langbehn & Pfohl, 1993; Young et al., 2006). Further research is required to determine the precise nature of the relationship between substance abuse and NSSI. It is currently unknown whether the increased likelihood of SIB is due to harmful behaviour during periods of acute intoxication or is the consequence of chronic use, which may lead to neurological deficits and impairments in functioning (Hufford, 2001; McCloskey & Berman, 2003). Additionally, those who are at risk of NSSI may simply be more at risk for alcohol and substance abuse in general. Given that approximately 69% of Canadian federal offenders have substance abuse issues (Kunic & Grant, 2006), improved understanding of this relationship could provide

valuable insight into the development of NSSI.

Childhood Abuse

Men with a history of NSSI were significantly more likely to have experienced all types of childhood abuse and neglect than those with no history of this behaviour. A correlation between NSSI and childhood abuse, particularly sexual and emotional abuse, has been found in a plethora of studies (e.g., Borrill et al., 2003; Fillmore & Dell, 2005; Gladstone et al., 2004; Gratz et al., 2002; Roe-Sepowitz, 2007; Turell & Armsworth, 2003; Yate et al., 2008), although most studies focus on this relationship in women. While a correlational relationship has been well-established, the mechanism by which abuse may lead to NSSI is poorly understood (Yates et al., 2008). The Childhood Abuse Model proposes that the experience of childhood sexual abuse leads to psychological disorders such as depression, posttraumatic stress disorder, borderline personality disorder, and substance abuse which, in turn, lead to NSSI. All relationships in the model were significant with the exception of posttraumatic stress disorder and NSSI.

Path analysis cannot determine causality, however, and the relationship is unlikely to be a direct one as many people who experience childhood abuse never engage in NSSI. The relationship is complex, and undoubtedly involves a combination of genetic predisposition and environmental influences. Even prospective data would not provide clarity on all the factors related to initiation, maintenance, or desistance of NSSI over time (Yates, 2009). In considering abuse as a precursor to NSSI, several potential mechanisms to explain NSSI could be proposed. Some of these include: the use of NSSI as a method of coping with negative emotions associated with abuse, as a way of imitating the abuse inflicted upon them in the past, the instilling of a sense of worthlessness and decreased understanding of self-care that is a result of the abuse, a way of communicating past abuses, or other factors resulting from or associated with the abuse experience (Chu, 1998; Connors, 1996; Gallop, 2002). Given the strong findings in the literature that NSSI is most often used as a method of coping with negative emotions (e.g., Klonsky, 2007; Gratz, 2003; Power & Usher, 2010) it is most likely that abuse leads to NSSI because NSSI is used to deal with the negative emotions associated with the abuse. It is not difficult to imagine that men who experienced abuse, particularly in childhood, spent their developmental years in challenging environments in which they

may not have been provided with an opportunity to develop appropriate coping and communication skills. However, further research is required to understand the initiation and maintenance of NSSI.

Impulsivity/Anger/Aggression

Men with a history of NSSI were significantly more likely to be rated as impulsive by intake parole officers during the initial assessment process. Other studies have found that impulsivity is higher in individuals who self-injure (Carli et al., 2010; Simeon et al., 1992). This suggests that there may be an impulsive aspect to NSSI. It is possible that individuals who engage in NSSI have difficulty delaying the urge to hurt themselves long enough to identify a more acceptable reaction to the situation the individual is facing.

Compared to men who did not have a history of NSSI, men who did have this history had significantly higher scores on the hostility, anger, and overall aggression subscales of the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992). Elevated levels of aggression have been found in males who self-injure in psychiatric hospitals and correctional facilities (Chowanec et al., 1991; Hillbrand et al., 1994; Matsumoto et al., 2005).

Although anger and impulsivity were found to be predictive of NSSI, aggression was not. The strong relationship found between impulsivity and NSSI is consistent with previous research (Carli et al., 2010; Simeon et al., 1992; Stanley, Gameroff, Michalsen, & Mann, 2001). Given that impulsivity may be defined as “actions that appear poorly conceived, prematurely expressed, unduly risky, or inappropriate to the situation and that often result in undesirable consequences” (Daruna & Barnes, 1993, p. 23), NSSI could be considered to be the quintessential impulsive behaviour.

In psychiatric and forensic populations, anger and aggression have been found to be higher among offenders who engage in NSSI (Chowanec et al., 1991; Hillbrand et al., 1994; Matsumoto et al., 2005; Simeon et al., 1992; Stanley et al., 2001). In the current study, anger and aggression were also higher in the NSSI group but only anger significantly predicted NSSI in the path analysis. Anger, aggression and impulsivity were all significantly inter-correlated and each partially correlated with NSSI. It may be that these three traits often occur in combination but that anger and impulsivity are the most important factor for engaging in NSSI. In women offenders, these three factors were

found to be inter-correlated (Power & Usher, in press). However, only impulsivity was found to be predictive of NSSI, making the finding that anger predicts NSSI unique to men.

Coping

Partial evidence was found for a difference in coping styles between the NSSI and non-NSSI groups using the Brief COPE questionnaire (Carver, 1997). After applying the Bonferroni correction, results indicated that men in the NSSI group were more likely to use self-distraction and venting as methods of coping compared to the non-NSSI group. The empirical evidence is strongest for the use of NSSI as a means of coping with negative emotions, also known as the affect regulation model (Klonsky, 2007; Prinstein, Guerry, Browne & Rancourt, 2009). Evidence for this model has been found in a variety of samples, including across different age groups and psychological profiles and for both genders (e.g., Briere & Gil, 1998; Brown, Comtois, & Linehan, 2002; Herpertz, 1995; Nock & Prinstein, 2004). It is possible that men who engage in NSSI have difficulty differentiating between adaptive and maladaptive coping mechanisms and may choose unhelpful methods more often than the non-NSSI group. Interestingly, no differences in coping styles were found between federally sentenced women who do and do not have a history of NSSI on this measure (Power & Usher, in press).

Sexual Orientation

No significant relationship was found between NSSI and sexual orientation and behaviour. This finding is counter to previous research indicating that men who report same-sex attraction or behaviour are more likely to engage in NSSI and suicide attempts (e.g., Bagley & Tremblay, 1997; Cochran & Mays, 2000). Federally sentenced women in Canada who had a history of NSSI were significantly less likely to identify as heterosexual and significantly more likely to have had sex with a female before being admitted to the institution (Power & Usher, in press). This lack of relationship may be due to the lower response rate received for these questions, although the sample was still large enough to detect significant relationships. Those who did not respond may have been more likely to have engaged in homosexual behaviour or there may have been an increased likelihood of not accurately reporting their behaviour due to perceived stigma

associated with same-sex attraction and behaviour, particularly in an institutional setting.

Conclusions

Significant and meaningful differences were found between men who had previously engaged in NSSI and those who had not. While increased levels of mental health problems have been noted in previous studies of NSSI, the present study is unique in shedding light on possible trajectories to the behaviour. Both models tested (the childhood abuse model and the anger/impulsivity/aggression model) predicted NSSI with about the same significance. This finding suggests that there are different paths to NSSI, and therefore a homogeneous treatment approach is unlikely to be effective for all individuals who self-injure. Intervention programs would need to be flexible so as to address the variable reasons why men self-injure. Additionally, there may be overlap between the two models and future research could further explore the relationship between the significant pathways presented here.

The influence of substance abuse and the use of differential coping mechanisms were identified as being related to NSSI in male federal offenders. Suicide attempts and NSSI were highly correlated in this study; however, participants clearly distinguished between the two behaviours. This finding suggests that suicide attempts and NSSI must be approached as distinct behaviours in order to be effectively treated and prevented.

Many of these results mirror those found with federally sentenced women, with a few notable exceptions (Power & Usher, in press). Higher rates of psychological disorders, substance abuse, childhood abuse, aggression, and impulsivity were found for both men and women with a history of NSSI. While impulsivity was strongly related to NSSI for both genders, anger was found to be uniquely predictive of NSSI in men. Differences in coping styles were found for men who engage in NSSI, but not for women. Finally while no relationship between sexual orientation and NSSI was found for male offenders, women with a history of NSSI were significantly less likely to identify as heterosexual. The significant relationships found here should be used to inform future research on the development of a tool to predict NSSI.

The potential for response bias due to the sensitive nature of the topic of study is a limitation of this study. While measures were taken to reduce the possibility of bias, such as reducing power differential through appropriate dress and demeanour and ensuring a

large sample size (Breakwell, Hammond, Fife-Schaw, & Smith, 2006), it is possible that certain aspects of NSSI were over- or under-represented in the sample. Additionally, conclusions on the prevalence of the behaviour among federally sentenced men could not be reached due to the nature of the sampling procedure used for this study. Further research involving randomized samples could be used to determine prevalence rates of NSSI in male federal offenders. Longitudinal studies would be required to determine how and why NSSI is initiated and maintained over time. This study, however, provides valuable information on the profile of male offenders who engage in NSSI and the trajectories that lead to this behaviour.

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Appendices

Appendix A: Semi-Structured Interview Schedule

I'd like to ask you some questions about your history before you entered the institution and about things that have happened since you came here. At the end of the interview I will ask questions about self-injury and attempted suicide.

Section A: Mental Health

Do you have kids?

I'm going to ask you some questions about your mental health.

Have you ever talked to a psychologist, counsellor, or doctor about psychological problems you were having?

When?

Why did this happen? (Possible prompts → you wanted to go, someone else made you go, something bad happened that you wanted to talk about)

How often did you speak with this person?

Have you ever been diagnosed with a psychological disorder?

Have you ever spent a night in a psychiatric hospital?

Have you ever experienced a head injury?

Possible prompts → in a car accident, fight, working, sports (hockey, football)

Possible prompts → did you have to go to the hospital/see a doctor, get stitches, lose consciousness?

Section B: History of Abuse

Now, I'd like to ask you some questions about your history and if you have ever experienced abuse. You don't have to go into detail.

Did you experience abuse as a child?

(Possible prompts → did anyone hit you, humiliate you, call you stupid, seriously threaten you, touch you in an inappropriate manner, sexually abuse you)

What kind of abuse?

Who was your abuser? (Mom, Dad, Brother, Sister, teacher)

Have you experienced abuse as an adult?

(Possible prompts → did anyone hit you, humiliate you, call you stupid, seriously threaten you, touch you in an inappropriate manner, sexually abuse you)

What kind of abuse?

Who was your abuser? (Possible prompts → Could be from a partner, boss, etc)

Section C: Suicide Attempts & Self-Injurious Behaviour

Finally, I'd like you to answer some questions about any suicide attempts or self-injury that you may have done. This may be a difficult topic, however, you should talk about things in a way that you are comfortable with.

Have you ever hurt yourself on purpose? (Possible prompts → cutting, slashing, using a ligature/strangulation, inserting something under your skin, head banging)

Was it a suicide attempt (did you really think you wanted to die)?

What types of self-injury have you done?

What type do you do most often?

What part of your body do you usually injure?

Tell me about the first time you harmed yourself.

When did it happen?

How did you do it (type of self-injury)?

Why did you do it? Did something happen to trigger the event? Where did you get the idea?

How did you feel immediately before you did it?

How did you feel immediately after you did it?

What happened immediately after you did it?

Did anyone find you while you were doing it? Was it likely that someone would find you?

Did you seek help after you did it? Did you tell anyone about it?

Did other people know you self-injured? How did other people react to the event?

What about when you have injured yourself since the first time

How did you do it (type of self-injury)?

Why did you do it? Did something happen to trigger the event?

How did you feel immediately before you did it?

How did you feel immediately after you did it?

Did you seek help after you did it?

Did you tell anyone about it? If so, how did people react?

Do you self-injure sometimes more than other times?

(Possible prompts → living at home, in the institution, money problems, drinking alcohol, feeling stressed, having relationship problems)

When have you done it more?

When have you done it less?

How often do/did you self-injure?

(Possible prompts → how much in the last week/month/year)

Did you self-injure more or less before you were incarcerated?

Do the other offenders know you harm yourself? Do they talk to you about it?

When you injured yourself before you came into the institution, why did you do it?

What about since you came into the institution? Are the reasons different? Is the type of harm different?

Since you came into the institution, do you do it more or less?

How long ago since you last harmed yourself?

Do you do anything now instead of harming yourself?

How did you figure out what you could do instead?

Appendix B: Offender Self-Injurious Behaviour Inventory (OSIBI)

Below are a number of questions about social support, sexual orientation, self-injury and suicide. Please read them carefully and answer each question as best you can.

- | | Yes | No | |
|---|-----------------------|-----------------------|-----------------------|
| 1. When I was on the outside, if I was upset, there was someone who was there for me. | <input type="radio"/> | <input type="radio"/> | |
| 2. On the inside, if I am upset, there is someone who is there for me. | <input type="radio"/> | <input type="radio"/> | |
| 3. How would you identify your sexual orientation? | | | |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Heterosexual
(Straight) | Homosexual
(Gay) | Bisexual | Other |
| 4. Before you came into the institution, had you ever had sex with a female? | <input type="radio"/> | <input type="radio"/> | |
| 5. Before you came into the institution, had you ever had had sex with a male? | <input type="radio"/> | <input type="radio"/> | |
| 6. Since you came into the institution, have you had sex with a female? | <input type="radio"/> | <input type="radio"/> | |
| 7. Since you came into the institution, have you had sex with a male? | <input type="radio"/> | <input type="radio"/> | |
| 8. Have you ever <i>thought</i> about killing yourself? | | | |
| <input type="radio"/> Yes | | | |
| <input type="radio"/> No | | | |
| 9. Have you ever <i>thought</i> about injuring yourself? | | | |
| <input type="radio"/> Yes | | | |
| <input type="radio"/> No | | | |

10. How many times have you tried to kill yourself...

	Never	1-2 times	3-5 times	More than 5 times
...in the past month	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...in the past year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...ever	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Have you ever intentionally injured yourself *without* trying to kill yourself?

- Yes → **continue to next question**
 No ↓ **Stop here**

12. How often did you injure yourself *without* trying to kill yourself...

	Never	1-2 times	3-5 times	More than 5 times
...in the past month	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...in the past year	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...ever	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. How old were you when you first intentionally injured yourself? _____

14. a) Did you injure yourself before you were incarcerated (anywhere)?

- Yes
 No

b) If yes, compared to when you were on the street, did you hurt yourself:

- A lot more
 A little more
 About the same amount
 A little less
 A lot less
 I have not hurt myself since I came in

b) Did you injure yourself before you came into CSC?

Yes

No

b) If yes, compared to before you came into CSC, do you hurt yourself:

A lot more

A little more

About the
same amount

A little less

A lot less

I have not
hurt myself
since I
came in

15. Do you injure yourself for any of the reasons listed below?

Yes **No**

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | To punish myself for feeling good |
| <input type="checkbox"/> | <input type="checkbox"/> | To punish myself for feeling bad |
| <input type="checkbox"/> | <input type="checkbox"/> | To punish myself for being a bad person |
| <input type="checkbox"/> | <input type="checkbox"/> | To punish myself for doing something bad |
| <input type="checkbox"/> | <input type="checkbox"/> | To do something that only I control and no one else can control |
| <input type="checkbox"/> | <input type="checkbox"/> | To stop me from killing myself |
| <input type="checkbox"/> | <input type="checkbox"/> | To protect people in my life |
| <input type="checkbox"/> | <input type="checkbox"/> | To reduce anxiety and despair |
| <input type="checkbox"/> | <input type="checkbox"/> | To feel less tense |
| <input type="checkbox"/> | <input type="checkbox"/> | To get a "high" like a drug high |
| <input type="checkbox"/> | <input type="checkbox"/> | For excitement |
| <input type="checkbox"/> | <input type="checkbox"/> | For sexual release (it feels good) |
| <input type="checkbox"/> | <input type="checkbox"/> | To get rid of sexual feelings |
| <input type="checkbox"/> | <input type="checkbox"/> | To feel something when I feel numb (to feel something real) |

Yes **No**

- To get moved out of my cell or unit
- To express anger to people who have disappointed me
- To stop feelings of being alone
- To control the reactions and behaviours of others (such as staff or friends)
- To stop feeling empty
- To feel physical pain because the emotional pain is too bad
- To keep bad memories away
- I see/hear other people doing it
- I really want to die
- To get out of doing things I don't want to do
- To avoid getting into trouble
- To show others how tough I am
- To get support or attention from staff
- To spite staff or make staff angry
- I am addicted to doing it
- I don't know why I do it
- Other: _____

16. Before you harm yourself, do you feel:

- Frustrated
- Depressed
- Angry
- Numb or unreal
- Other: _____

17. After your harm yourself, do you feel:

- A lot better A little better About the same A little worse A lot worse

18. Which events have made you hurt yourself?

- | Yes | No | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | Loss of relationship (such as a break-up) |
| <input type="checkbox"/> | <input type="checkbox"/> | Denial of parole |
| <input type="checkbox"/> | <input type="checkbox"/> | Feeling threatened within institution |
| <input type="checkbox"/> | <input type="checkbox"/> | Increase in stress |
| <input type="checkbox"/> | <input type="checkbox"/> | Death of friend/family member |
| <input type="checkbox"/> | <input type="checkbox"/> | Occasion (such as Christmas) |
| <input type="checkbox"/> | <input type="checkbox"/> | Anniversary of a negative event (such as death of a loved one) |
| <input type="checkbox"/> | <input type="checkbox"/> | Anniversary of my crime |
| <input type="checkbox"/> | <input type="checkbox"/> | To get put in segregation (felt threatened, had a friend in there, needed quiet time) |
| <input type="checkbox"/> | <input type="checkbox"/> | Seeing another offender hurt themselves |
| <input type="checkbox"/> | <input type="checkbox"/> | None, I don't hurt myself for any of these reasons |
| <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ |

19. When you hurt yourself, do other people know? **Never** **Sometimes** **Always**

20. Where did you get the idea to hurt yourself the first time? (please check one)

- From friends
- From other offenders
- From other patients in a hospital
- From a book or magazine
- From a movie or TV show
- From the internet
- I thought of it myself
- Other: _____

21. Do you want to stop injuring yourself?

- Yes
- No
- I don't know
- I have stopped injuring myself

22. Have you ever been treated by a nurse or doctor after injuring yourself?

- Yes
- No

23. When you injure yourself, how bad is the injury *usually*?

- | | | |
|-----------------------------|---------------------------------|-------------------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Not bad at all | Somewhat bad | Very bad |
| (I don't need medical help) | (I sometimes need medical help) | (I could die from the injury) |

24. The worst time you hurt yourself, how bad was the injury?

- | | | |
|-----------------------------|---------------------------------|-------------------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Not bad at all | Somewhat bad | Very bad |
| (I don't need medical help) | (I sometimes need medical help) | (I could die from the injury) |

25. Have you ever injured yourself so badly that if you hadn't gotten help, you would have died?

- Yes
- No

26. Do you tell people after you injure yourself?

- Never
- Rarely
- Sometimes
- Often
- Always

27. Which parts of your body do you injure?

- | Yes | No | |
|--------------------------|--------------------------|-------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Head |
| <input type="checkbox"/> | <input type="checkbox"/> | Eyes |
| <input type="checkbox"/> | <input type="checkbox"/> | Face |
| <input type="checkbox"/> | <input type="checkbox"/> | Mouth |
| <input type="checkbox"/> | <input type="checkbox"/> | Neck |
| <input type="checkbox"/> | <input type="checkbox"/> | Chest |
| <input type="checkbox"/> | <input type="checkbox"/> | Back |
| <input type="checkbox"/> | <input type="checkbox"/> | Abdomen (Stomach) |
| <input type="checkbox"/> | <input type="checkbox"/> | Hips/Buttocks |
| <input type="checkbox"/> | <input type="checkbox"/> | Genitals |
| <input type="checkbox"/> | <input type="checkbox"/> | Rectum/Anus |
| <input type="checkbox"/> | <input type="checkbox"/> | Arms |

- Hands
- Legs
- Feet
- Other: _____

28. What kinds of injury do you do? (check all that apply)

Now	Before you entered the institution	
<input type="checkbox"/>	<input type="checkbox"/>	Cutting (Slashing/Stabbing)
<input type="checkbox"/>	<input type="checkbox"/>	Burning
<input type="checkbox"/>	<input type="checkbox"/>	Tying something around my neck
<input type="checkbox"/>	<input type="checkbox"/>	Tying something around another body part (such as leg, arm)
<input type="checkbox"/>	<input type="checkbox"/>	Scratching
<input type="checkbox"/>	<input type="checkbox"/>	Hair Pulling
<input type="checkbox"/>	<input type="checkbox"/>	Plastic bag over head
<input type="checkbox"/>	<input type="checkbox"/>	Inserting objects and pulling them out again
<input type="checkbox"/>	<input type="checkbox"/>	Inserting objects and leaving them in
<input type="checkbox"/>	<input type="checkbox"/>	Swallowing things that are not food (pins, glass)
<input type="checkbox"/>	<input type="checkbox"/>	Head banging
<input type="checkbox"/>	<input type="checkbox"/>	Other: _____

Appendix C: DFIA indicators used for impulsivity measure

1. Has concentration problems
2. Has an unstable job history
3. Often shows up late for work
4. Has poor attendance record
5. Lacks initiative
6. Has quit job without another
7. Unaware of consequences
8. Impulsive
9. Manages time poorly
10. Has low frustration tolerance
11. Takes risks inappropriately
12. Thrill-seeking
13. Non-reflective
14. Is not conscientious

0 = no

1 = yes