Predicting Suicide Attempts Among Male Offenders in Federal Penitentiaries

by

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EXECUTIVE SUMMARY

Although there is a need for research on *all* forms of suicidal behaviour by offenders, only suicide attempts were addressed in this study. This focus was taken for two reasons. First, many more offenders *attempt* suicide each year than do actually succeed. Second, a large proportion of offenders who eventually commit suicide have made a prior attempt. From a management perspective, reducing the incidence of suicide attempts should function to reduce completed suicides and contribute to the operation of the institution in general. As such, the first goal of this study was to determine the importance of particular variables to offenders' risk of subsequent attempted suicide, while accounting for several of the limitations associated with previous research on suicidal behaviour by offenders.

As part of an overall correctional strategy, the Correctional Service of Canada incorporated a suicide potential scale into the Offender Intake Assessment (OIA) process in the fall of 1994. This scale consists of nine indicators that are scored as being present or absent. These indicators, derived from clinical experience and the available literature on prison suicide, include: 1) may be suicidal; 2) previous suicide attempt; 3) recent psychological and/or psychiatric intervention; 4) recent loss of a relative/spouse; 5) experiencing major problems; 6) currently under the influence of alcohol/drugs; 7) signs of depression; 8) expressed suicidal ideation; and 9) has a suicide plan. The suicide potential instrument was designed as a flagging strategy to assist correctional officers in their determination of the level of risk for suicide that an offender may present at intake. Although this scale was principally designed to standardize practice, the second goal of the present study was to determine if items from the suicide potential scale could be used in a predictive manner, that is identifying those offenders, who, while maybe not necessarily high risk for engaging in suicidal behaviour during the intake process, but could be at increased risk for these behaviours later in their sentence.

Phase 1

This investigation began with analyses of demographic and sentence-related information for any male offender for whom an incident report of attempted suicide had ever been filed on the Offender Management System (n=731). The offenders who attempted suicide were compared with a random sample of offenders who had never attempted suicide while in federal custody. Findings from the first phase of the study supported and improved on existing literature on suicidal behaviour in prison. Overall, male offenders who attempted suicide were more likely to be younger and be unattached relative than their counterparts who did not attempt suicide. Offenders who attempted suicide were more likely to have homicide, theft, and robbery offences, and fewer had committed sexual or drug-related offences. Moreover, offenders who attempted suicide were more likely to be serving life sentences and had been classified as being higher security risk at intake. From these findings, it is clear that some demographic factors distinguish among offenders according to their long-term suicide potential.

Phase 2

The second phase required analyses of offenders who had full OIA information, however, this process was not automated until 1995. As a result, significantly fewer offenders could be included in this second phase. When the frequency of attempts were examined, there didn't appear to be appreciable differences between the number of incidents of attempted suicide recorded between 1991 and 1994 (n=95) and those recorded between 1995 and 1998 (n=115) when the OIA process was instituted.

Consequently, analyses were conducted on 152 offenders: 76 offenders who attempted suicide and for whom full OIA information was available and for 76 offenders who had not attempted suicide who had been matched with the former group on age at admission, offence type, and sentence length. These analyses included various aspects of psychological functioning assessed at intake.

Findings indicated that difficulties with psychological adjustment differentiated male offenders who later attempted suicide from those who did not. Compared to others, offenders who attempted suicide displayed more severe maladjustment problems, had dysfunctional families, extensive psychiatric histories, extensive criminal histories, and discipline problems. As well, offenders who attempted suicide had more problems adjusting within the institution, as indicated by institutional incident reports. These findings suggest that offenders who attempt suicide have a wide range of interpersonal difficulties and few coping skills.

Examination of the existing suicide potential scale indicated that it was a useful measure to assess risk for suicide while in prison, certainly meeting a standard of care. Three indicators were endorsed for more than 10% of the entire sample (attempters and comparison offenders): may be suicidal (10.6%); previous suicide attempt (35.5%); and recent psychological and/or psychiatric intervention (23.0%). All nine items had very good face validity. Further, the scale addressed aspects of potential suicide risk thought to be integral to a comprehensive assessment process: the need for short- and long-term evaluation. Importantly, the majority of the items were essential to short-term prediction of potential suicide risk. For example, assessing the existence and complexity of a suicide plan is critical to managing risk during the intake process, a period of distress for offenders

Given the efficacy of this scale for flagging offenders at significant risk for engaging in suicidal behaviours at intake, further analyses focused on the utility of the scale for longer-term prediction of suicide risk. To determine if the scale could be used for long-term assessment, statistical *prediction* of suicide attempts was undertaken. These analyses revealed that two of nine indicators from the existing suicide potential scale predicted subsequent suicide attempts: 1) previous suicide attempt and 2) recent psychological and/or psychiatric intervention. In addition to these two suicidal potential indicators, a few additional variables were found to significantly contribute to the prediction of suicide attempts, namely: 1) discipline problems; 2) incidents related to contraband; and 3) previous adult convictions. Use of these five items led to the

prediction of the majority of suicide attempts by offenders in the present study (92%)--even though these attempts occurred *later in the sentence.*

These findings confirm the fact that the existing suicide assessment undertaken at intake is useful for short-term assessment and flagging offenders currently at risk for suicidal behaviours. However, we now know that long-term prediction of offenders who maybe at risk for suicidal behaviour later in their sentence can also be accomplished by including three additional non-mental health items already assessed at intake. This research supports the validity of the OIA process in the prediction of suicidal behaviour, however further replication is warranted. Moreover, the variables found to be important for differentiating offenders who attempted suicide from non-attempters, and for statistical prediction of suicide attempts, provided a definite starting point for the development of a second generation in suicide risk assessment.

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INTRODUCTION

Previous research indicates that there is a much higher incidence of suicidal behaviour[1] in prison compared to that of other settings (Backett, 1987; Bogue & Power, 1995; Burtch & Ericson, 1979; Dooley, 1990). In Canada, the rate of suicide in federal custody is four times the rate observed in society at large (Laishes, 1997). This fact, in addition to the rising rates of suicide for young men reported in the last 10 years (Gunn, 1997), highlights the importance of focusing on risk assessment and prevention of suicidal behaviour within the prison system.

In the general population, a wide range of factors has been identified as contributing to suicide risk (e.g., marital/family difficulties). Given the contextual differences between prison and society in general, it is foreseeable that characteristics associated with suicidal behaviour will have differential importance in the assessment of offenders'[2] suicide risk compared to that of non-incarcerated persons. There are at least three areas in which these differences are obvious: the environment; features of the offender population; and differences in the meaning of suicidal behaviour by offenders.

First, life in prison is markedly different from that in the community. These differences are most notable when we consider static aspects such as the social environment or offenders' degree of personal control. However, in addition to pressure from continuous contextual factors (e.g., poor inmate-staff relations), offenders also face many unique stresses that are not the norm in society at large (e.g., parole reviews, personal safety issues) (Zamble & Porporino, 1988).

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1 For the purpose of this study, the term suicidal behaviour will encompass both suicide attempts and completed suicides.

2 Unless otherwise noted, the term offender used in this paper refers to incarcerated offenders only (i.e. not those in the community).

Second, some individual characteristics may be more strongly associated with a criminal lifestyle, as such, these traits would be over-represented in the offender population compared to the general population. For example, there is a strong association between violence and impulsivity (e.g., Webster & Jackson, 1997). Thus, one might expect a higher base rate of impulsivity for incarcerated offenders. In turn, impulsivity is associated with suicidal behaviour. This combination of characteristics may lead to an expectation of a higher rate of suicidal behaviour in prison. Psychiatric history and substance abuse problems are also examples of factors associated with suicidal behaviour in the community and are highly represented in federal offenders.

Finally, there may be some systematic differences in the way suicidal tendencies are acted upon in the prison. In fact, Livingston (1997) asserts that self-injurious behaviour engaged in while in prison is qualitatively different in some dimensions than the same type of behaviour in the general population. For example, researchers have noted that it is comparatively common for offenders to choose a highly lethal method of self-harm but to have a low level of suicidal intent (e.g., Albanese, 1983; Wool & Dooley, 1987). Livingston further notes, "the classification of self-injury in terms of perceived lethality is also inextricably linked with the tendency to classify this category of behaviour(s) as manipulative" (p.21). Labelling these behaviours as manipulative can have a negative impact on the manner in which these acts are dealt: it may foster a belief that self-injury is an attempt by offenders to exploit the prison system. This viewpoint has been echoed by others (e.g., Dexter & Towl, 1994; Shea, 1993), who further argue that there can be no distinction between manipulative and non-manipulative behaviours; even completed suicide may be manipulative in nature. Moreover, these researchers believe that acknowledging manipulation as a reason for self-injury validates hostile reactions from staff, and may serve to augment the seriousness of subsequent attempts.

These points support the suggestion that there may be some ways in which suicidal risk and suicidal behaviour could be differentially assessed across settings and populations. Given that many previous studies of offender suicide and attempted suicide have been

descriptive in nature (e.g., Anno, 1985; Bonner, 1992; Crighton & Towl, 1997; Larivière, 1997; Lester, 1995), little is known about the factors *most* important to the assessment of the suicide risk of offenders. Gaining such knowledge is essential, as it forms the base from which to develop protocols to assess the suicide risk of offenders. This study was designed to address these issues and to account for several of the limitations associated with previous research on suicidal behaviour by offenders. A postdictive rather than retrospective method of data gathering was used.[3] Also, quantitative methods of data analysis (specifically multivariate measures) were employed to answer the research questions. Finally, comparison groups were included in the design. This addition allowed for an examination of: 1) differences between offenders who did and did not engage in suicidal behaviours; and 2) variables that would predict subsequent suicidal behaviours.

Framework of the Research

Although there is a need for research on *all* forms of suicidal behaviour by offenders, only suicide attempts were addressed in this study. This focus was taken for two reasons. First, many more offenders *attempt* suicide each year than do actually succeed. Second, a large proportion of offenders who eventually commit suicide have made a prior attempt. From a management perspective, reducing the incidence of suicide attempts should function to reduce completed suicides and contribute to the operation of the institution in general.

Given that the meaning and causes of suicidal behaviour are different for men and women (e.g., Liebling, 1994; Snow, 1997), it was decided that separate studies should be developed to address this issue for federally sentenced men and women. This decision was supported by the fact that CSC is committed to applying a women-centred multi-

[3] Postdiction refers to the prediction/analysis of an event that has already occurred using data collected *prior* to the event. In this manner, the data collection and subsequent statistical analysis is not unduly influenced by the fact that the targeted event did actually occur (or not). For this reason this methodology is superior to retrospective studies in which data is collected *after* the targeted event.

faceted approach to the programs and tools developed for women offenders. As such, the goals for a study of suicidal behaviour by women will be similar, but an approach appropriate to the unique experience and characteristics of the population (e.g., small and geographically diverse) will be employed.

Factors Important to Suicide Risk Assessment

The first goal of this study was to further our knowledge concerning the importance of particular variables to the assessment of suicide risk for offenders. Review of existing research on suicidal behaviour in prison reveals specific static factors that may be important to consider (see Polvi, 1997a for a review)[4]. For example, there is a general consensus that suicide rates are higher among prisoners with a psychiatric illness and drug or alcohol dependence (Bogue & Power, 1995; Burtch & Ericson, 1979; Dooley, 1990).

Demographic Factors

Age. Demographic factors found to be associated with suicidal behaviour in the community include age, ethnicity, and marital status. Research indicates that in the general population, the incidence of suicidal behaviour increases with age (Lester & Danto, 1993). However, for offenders increasing age has been hypothesized to be a less influential predictor of suicide risk (Burtch & Ericson, 1979). In fact, researchers have reported a bimodal distribution: it appears that suicide rates are higher for both younger and older offenders (Anno, 1985; Bogue & Power, 1995; Burtch & Ericson, 1979).

Marital status. In general, marital status is an important correlate of suicide (Burtch & Ericson, 1979). The increased incidence of suicide for non-married persons may be a function of the degree of social support available during times of stress (Heikkinen, Aro, &

[4] The focus of this review was on variables that could be assessed at intake. Precipitating events and dynamic factors were not addressed presently.

Lönnqvist, 1993). Moreover, recent loss of a significant other may act as an additional risk factor.

Ethnicity. Research conducted in the United States generally indicates that Caucasian men are more likely to commit suicide than men from other ethnic backgrounds, particularly Black men (Anno, 1985; NY State Department of Correctional Services, 1994; Salvie, Smith, & Brewer, 1989). However, there is very little information available from a Canadian perspective concerning the relation of ethnicity to offenders' risk for engaging in suicidal behaviour. One report on the characteristics of offenders who had committed suicide indicated that the majority of offenders were Caucasian (Larivière, 1997). Interestingly, Aboriginal offenders were under-represented in that sample. These findings need to be explored further.

Offence Characteristics

Static offence characteristics associated with suicidal behaviour in previous research include type of offence committed and sentence length. Researchers who report an association between suicide and type of offence most often indicate that those who engage in suicidal behaviour have committed violent or person-based crimes (Anno, 1985; Bogue & Power, 1995; NY State Department of Correctional Services, 1994). Burtch and Ericson (1979) suggest that offenders' perceptions of their sentence length will have more of an impact on their state of mind than their actual sentence. In fact, they report that offenders who commit suicide are serving very short (less than 4 years) or life sentences. This finding has been reported by other researchers (Anno, 1985; NY State Department of Correctional Services, 1994; Salvie et al., 1989), including those who examine Canadian samples (Larivière, 1997). It is possible that these characteristics (offence type and sentence length) may differentiate offenders who attempt suicide from those who do not.

Psychiatric History and Substance Abuse Problems

The existence of previous psychiatric problems has been highly associated with suicidal behaviours regardless of the setting and population examined (Anno, 1985; Backett, 1987; Bogue & Power, 1995; Bonner 1992; Burtch & Ericson, 1979; Dooley, 1990; Jones, 1986; White & Schimmel, 1995). This fact, in addition to rates of mental disorders, which are generally higher for federal offenders than for persons in the community (Motiuk & Porporino, 1991), suggests that some of the over-representation of suicidal behaviour reported in prison may be accounted for by psychiatric history.

There has been little research on the relative importance of different types of disorders, and their chronicity for offender samples. However, some researchers suggest that mood disorders, such as depression, may be linked to increased suicide risk in the community (Beck, Steer, Beck, & Newman, 1993). Thus, there may be differential risk associated with particular diagnoses. Regardless, due to the constraints of the data available, only a general acknowledgement of existing psychiatric problems was assessed in the present study.

Substance abuse problems are also associated with suicidal behaviour both in the community and in prison (Bogue & Power, 1995; Green, Kendall, André, Looman, & Polvi, 1993; Lester, 1982; Suokas & Lönnqvist, 1995). However, due to the high percentage of offenders who exhibit substance abuse problems (approximately two thirds of offenders; Boland, Henderson, & Baker, 1998), it is possible that this factor may not *differentiate* offenders who attempt suicide from those who do not.

Suicidal History

Researchers have also discovered that having made a previous suicide attempt or having a family history of suicide is also associated with a higher incidence of engaging in suicidal behaviour (Clark & Fawcett, 1992). Examinations of the history of those who commit suicide in prison reveal that at least half of the offenders who completed suicide had made

a previous attempt (Anno, 1985; Bonner, 1992; Burtch & Ericson, 1979; Dooley, 1990). Having a family history of suicide may also act as a risk factor for subsequent attempts. In fact, there has been some suggestion that familial suicidal behaviour may have a genetic basis (see Polvi, 1997a for a brief discussion). Research is needed to further explicate the impact of prior suicidal behaviour and exposure to suicide on current risk.

Current Institutional Adjustment

Offenders' adjustment within the institution likely affects their level of suicidal ideation and thus their risk of suicide. It is possible that offenders who have difficulty adjusting to institutional life (e.g., the restrictions and environmental characteristics associated with imprisonment) may be at greater risk for hurting themselves. One *might* further expect that offenders who are seen as management problems in the institution are also at increased risk for engaging in suicidal behaviour. In support of this notion, some researchers indicate that offenders who engage in suicidal behaviour have been placed in special handling units (Jones, 1986; White & Schimmel, 1995) or isolated from others (e.g., in segregation; Burtch & Ericson, 1979). Thus, there is a need to assess the impact of offenders' current institutional adjustment on their risk of engaging in suicidal behaviour.

History of Community Adjustment and Criminal Risk

Prior difficulties with community adjustment and history of criminal risk may also be important to differentiating those who attempt suicide from non-attempters. It is possible that offenders who have more problems while in the community, who have escaped or violated their parole in the past, and who had more extensive criminal histories are at a greater risk for suicide attempts in the prison. This suggestion has not been well studied in previous examinations. Thus, there is a need to assess the impact of 'high criminal risk' status, prior to the present incarceration, on offenders' risk of attempting suicide.

Offender Characteristics Assessed at Intake

While there is no doubt that clinical factors (e.g., depression and coping problems) affect day-to-day levels of suicidal ideation, it is also possible that some of these characteristics may have *longer-term* implications for offenders' behaviours. Moreover, it is possible that these factors, assessed at intake, are stable enough to identify offenders who subsequently attempt suicide.

Impulsivity and externalizing problems. Offenders, who have a tendency to act out, are poorly self-regulated, and engage in impulsive acts, may be more likely to attempt suicide. In fact, although the relationship appears to be complex, impulsivity is a trait that has a definite association with suicidal behaviour (see Polvi, 1997b).

Social problem solving and coping problems. Poor social problem-solving and an inability to cope are characteristics that are moderately stable in the absence of treatment. However, these factors make a strong contribution to suicide risk (e.g., Polvi, 1999). For example, offenders who do not have well developed coping skills may resort to self-harm in an attempt to attain goals (e.g., to get out of segregation) and deal with stressful situations. Thus, offenders who are unable to manage in their social environment and do not have the resources to cope with their difficulties or the skills to solve the social problems they are faced with, may be more likely to engage in suicidal behaviour as a relief from the pressure.

Internalizing problems. Internalizing problems such as depression, anxiety and hopelessness have been consistently associated with suicidal behaviour (Holden, Mendonca, & Serin, 1989). Further, those who engage in self-injurious behaviour endorse higher levels of hopelessness about the future than those who do not (MacLeod, Wilkins, & Linehan, 1992).

Family History and Functioning. It is possible that the experience of dysfunctional family relationships may affect suicide risk. In fact, lack of reliable social supports seem to be a strong contributor to subsequent suicide and suicide attempts (e.g., Polvi, 1997b).

Summary

In sum, there is a range of factors that may be important to the assessment of suicide risk, and which may differentiate offenders who engage in suicidal behaviour from those who do not. These factors were the focus of the present study in which we sought to further our understanding of suicidal behaviour in prison. Although not all-encompassing, this pool of candidate variables represents an initial point for a more focused and developed examination of suicidal behaviour by offenders and would be essential to consider in any evaluation of suicide risk assessment protocols.[5]

Suicide Risk Assessment

The importance of suicide risk assessment upon admission to institutions can not be underestimated. In fact, research indicates that a significant number of offenders commit suicide near the beginning of their sentences (Anno, 1985; Bogue & Power, 1995; Burtch & Ericson, 1979; NY State Department of Correctional Services, 1994). As such, it is important to determine their level of suicide risk upon intake so institutional staff can uphold a standard of care and institute appropriate management procedures for these offenders: levels of risk dictate policies and procedures to follow to ensure the offenders' safety.

As part of an overall correctional strategy, CSC has incorporated a suicide risk scale into the assessment completed when offenders are admitted to federal custody. This scale consists of nine indicators that are scored as present/absent, chosen for their clinical validity and demonstrated importance in predicting suicide risk (see Table 1).

[5] It should be noted that this review was limited to static person-based instead of relating to aspects of the environment or precipitants of suicidal behaviour.

The majority of the indicators from the current suicide potential scale pertain to the immediate determination of offender's current level of suicide risk. (Motiuk, 1993, 1997). For example, determining whether offenders are currently expressing suicidal ideation would be essential for determination of their immediate risk of engaging in suicidal behaviour.

Table 1: Indicators of the Suicide Potential Scale

Indicator (scored as present/absent)
1. The offender may be suicidal.
2. The offender has made a previous suicide attempt.
3. The offender has undergone recent psychological/psychiatric intervention.
4. The offenders has experienced recent loss of a relative/spouse.
5. The offender is presently experiencing major problems (i.e. legal).
6. The offender is currently under influence of alcohol/drugs.
7. The offender shows signs of depression.
8. The offender has expressed suicidal ideation.
9. The offender has a suicide plan.

Although this scale was principally designed to standardize practice, the second goal of the present study was to determine if items from the suicide potential scale could be used in a predictive manner. That is identifying those offenders, who, while not necessarily an acute and high risk for engaging in suicidal behaviour during the intake process, may be at increased risk for these behaviours later in their sentence. To this end we examined: 1) differences between offenders who attempted suicide and non-attempters on the total score and individual indicators from the suicide potential scale; and 2) the efficacy of this scale for predicting subsequent suicide attempts.

GOALS

As previously stated, there were two goals central to this study. The first was to further our knowledge of variables important to suicide risk assessment. In particular, we sought to highlight systematic differences between federally incarcerated males who attempted suicide and those who did not. Second, we sought to determine whether the existing suicide risk assessment scale could be used as a predictive instrument in addition to its function as a flagging mechanism for offenders presenting with acute levels of suicidal ideation at intake.

METHOD

Sources of Information[6]

Offender Management System: Offence Information and Incident Reports

Information on the offender's current offence, sentence length and security level at intake was taken from an offence database maintained by CSC. Suicide attempts and other incidents that occurred within the institution were identified through the use of incident reports logged by correctional staff in the institution. These reports are completed for many different types of events (e.g., causing a disturbance, assaulting another offender, being assaulted, etc.).

Incident variables coded from this information included: self-harm (all suicide and self-injury); committing violence (murder, assault, hostage taking, fighting); escape-related incidents (escape from facility, fail to return, escape escort); possession of and receiving/transporting contraband; victimization (victim of attempted murder, murder, assaulted, fights, hostage, victim of disturbance or discipline problems); involved in major or minor disturbance; involved with banned substances (use or possession); discipline problems; requests for protective custody; and other incidents (i.e., fire, damage government property, walk-away).

Intake Assessment

Case-specific information was retrieved from the Offender Intake Assessment (OIA) database. Briefly, comprehensive information was collected regarding each offender's criminal and mental health history, social situation, education, and other factors relevant to determining criminal risk and identifying offender needs. Data regarding the mental health,

[6] All variables used in this study were taken from a database of offender information maintained by the Correctional Service of Canada.

psychological functioning, and case risk and needs of offenders at intake was derived from the Case Needs Identification and Analysis (CNIA) portion of OIA.
From this database specific variables were targeted, and through statistical analysis, they were aggregated to create six factors. Importantly, these empirically derived factors reflected dimensions identified in previous research as important to the assessment of suicide (e.g., Polvi, 1997a; see Appendix A for indicator descriptions). These factors were:

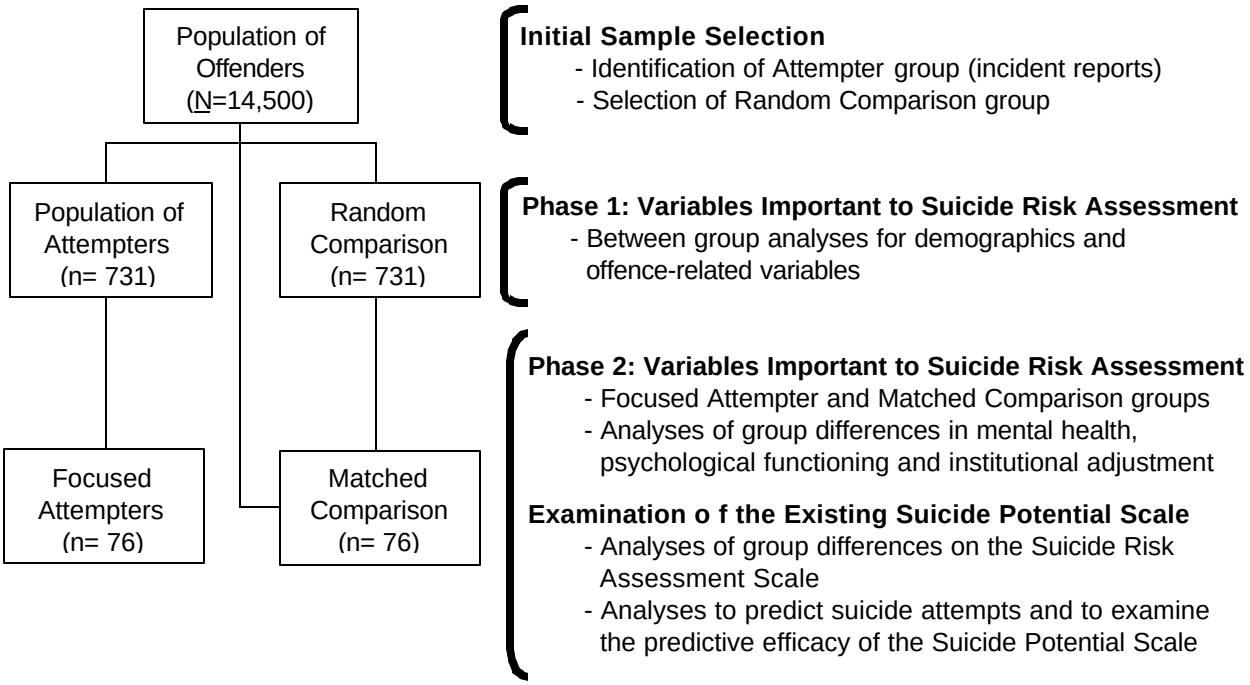
- **Externalizing and Social Cognitive Problems (4 indicators):** Low self-awareness and empathy problems social problem solving, impulsivity and anger.
- **Substance Abuse (2 indicators):** Alcohol and drug abuse problems.
- **Internalizing and Victimized with Psychiatric Problems (3 indicators):** Social isolation, internalization, victimization, and psychiatric problems.
- **Dysfunctional Family Relationships (3 indicators):** Predatory behaviour, poor social support, and having dysfunctional family relationships.
- **Lack of Education and Cognitive Functioning Problems (2 indicators).**
- **High Criminal Risk (5 indicators):** Lack of community functioning, employment problems, discipline problems and previous adult and youth convictions.

Initial Sample Selection

A flow chart depicting the procedures and phases of this study is presented in Figure 1. The first step involved the selection of the initial samples. To this end, any instances of self-injurious behaviour[7] by offenders, logged through incident reports on OMS, were examined. Taking the most serious, most recent self-injurious act, a population of offenders who had attempted suicide was identified.

[7] These include self-injury as well as suicidal behaviours.

Figure 1: Flow Chart Depicting Phase of the Present Study



The population of attempters included 731 male offenders between the ages of 15 and 63 years (Mage= 26.00, SD= 7.48). This sample did not necessarily represent the population of offenders who ever attempted suicide in federal custody because automated reporting was in place only during the latter part of the 1990s. It is likely that some suicide attempts occurring prior to the early nineties are documented only in paper form, and were therefore unavailable for inclusion in the present report given the data retrieval strategy employed. For the initial analyses, the 731 offenders who attempted suicide were compared with a random sample of offenders who had never attempted suicide while in federal custody (n=731).

In terms of ethnic composition, 81% of offenders were Caucasian and 14% were Aboriginal. An initial comparison group (n=731) was selected randomly from a database of all federal offenders. This group was included to permit a general comparison (e.g., demographics and current offence information) with the entire sample of those who attempted suicide. These offenders ranged in age from 17 to 87 years (M_{age}= 29.93, SD=

10.31). In terms of ethnic composition, 82% of offenders were Caucasian and 11% were Aboriginal.

PHASE 1 FINDINGS: VARIABLES IMPORTANT TO SUICIDE RISK ASSESSMENT

Initial Analyses: Demographics and Sentence-Related Information

Chi-square analyses indicated that there were some demographic differences between the attempter (n=731) and random comparison (n=731) groups (see Table 2).[8] Offenders who attempted suicide were over-represented in the younger categories (i.e., below 29 years of age) and under-represented in the older age groups, relative to non-attempters. In addition, they were more likely to be unmarried. There were no between-group differences for ethnicity.

Next, a between-groups comparison for variables related to the current sentence revealed several interesting findings (see Table 3). Specifically, offenders who had attempted suicide were more likely to have committed offences involving homicide, theft, and robbery. Conversely, non-attempters had committed a higher percentage of sexual and drug-related offences. Regarding sentence length, although the majority of all offenders were serving sentences under six years, the comparison group was marginally more likely to be serving shorter sentences. Additionally, attempters were more likely to be serving sentences over 10 years or life sentences. Finally, the

offenders who had attempted suicide had been placed in higher security institutions at intake than non-attempters. These analyses remained significant even when the offenders serving life sentences were removed.

[8] The alpha level denoting a significant finding was made more stringent (i.e., $p<.01$ rather than .05) to account for the number of analyses run in this section.

Table 2: Demographic Information by Group

Demographics	Attempters (n=731)	Comparison (n=731)
Age:		
20 years and under***	27%	16%
21-29 years**	52%	41%
30-39 years***	15%	27%
40-49 years***	5%	11%
50 years +***	1%	5%
Race:		
Caucasian	81%	82%
Aboriginal	15%	11%
Other	4%	7%
Marital Status:		
Married/Common-law	36%	44%
Not Married***	64%	56%

Note: ** p.<.01, *** p.<.001, **** p.<.0001

Table 3: Current Sentence Information by Group

Current Sentence	Attempters (n=731)	Comparison(n=731)
Type of Offences:		
Sex Offender**	6%	11%
Homicide***	11%	4%
Drugs***	2%	8%
Break and Enter/Theft***	22%	15%
Robbery***	20%	10%
Escape	1%	0%
Arson	2%	1%
Assault	4%	6%
Other Offences***	32%	45%
Sentence Length:		
2-5 years**	71%	84%
6-9 years	8%	9%
10+ years***	6%	3%
Life***	15%	4%
Security Level: [9]		
Maximum***	31%	15%
Medium	57%	59%
Minimum**	8%	24%
Multilevel**	4%	2%

Note: ** p.<.01, *** p.<.001, **** p.<.0001

[9] Based on 704 Attempters and 360 Comparison offenders.

PHASE 2 FINDINGS: MENTAL HEALTH, PSYCHOLOGICAL FUNCTIONING, AND INSTITUTIONAL ADJUSTMENT

In phase two, analyses pertaining to group differences in mental health and psychological functioning and institutional adjustment were conducted. Because psychological functioning and adjustment information was only available for a limited number of the attempters, a second group of offenders who had attempted suicide was created (n=76). A second comparison group was also selected. Offenders in this group were matched with the subgroup of attempters (n=76). Static characteristics important to differentiating attempters from other offenders were used as matching variables.

The second phase required analyses with offenders who had full OIA information, however, this process was not automated until 1995. As a result, significantly fewer offenders could be included in this second phase. When the frequency of attempts were examined, there didn't appear to be appreciable differences between the number of incidents of attempted suicide recorded between 1991 and 1994 (n=95) and those recorded between 1995 and 1998 (n=115) when the OIA process was instituted.

Analyses undertaken in the second phase included 152 offenders: 76 offenders who attempted suicide and for whom full OIA information was available[10]; and 76 offenders had not attempted suicide who had been matched with the offenders who attempted suicide on the following variables[11]: age at admission (above and below 30 years); sentence length (less than or equal to four and 5 and above); and type of offences committed currently (murder/scheduled and non-scheduled[12]). Controlling for some of the group differences in suicide that we can not affect (i.e., static characteristics) serves to highlight the impact of dynamic factors (e.g., psychological functioning and current institutional adjustment) on suicidal behaviour.

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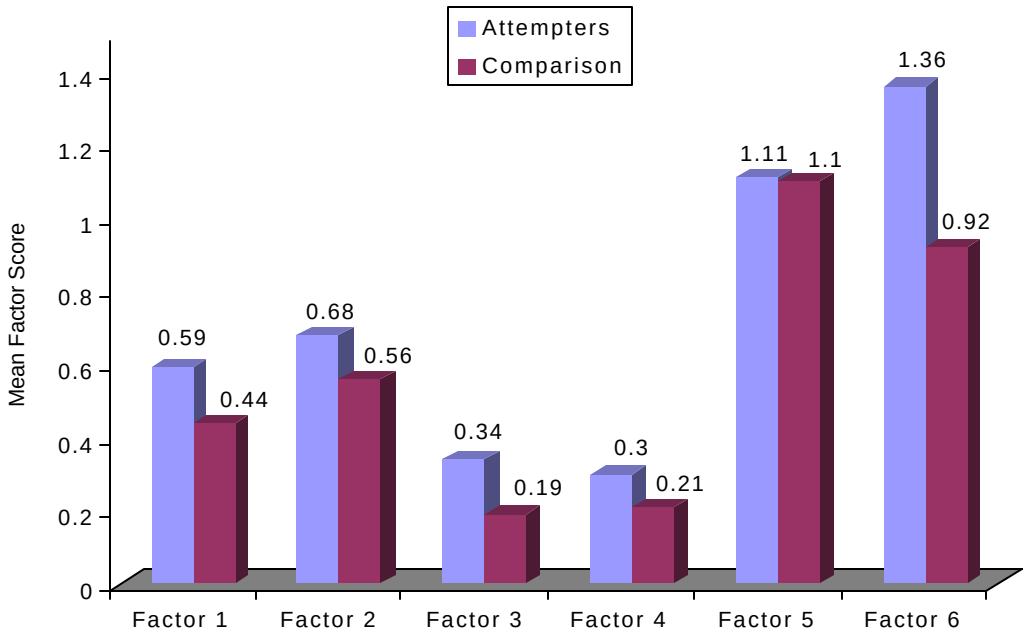
[10] These offenders ranged in age from 18 to 50 years (M_{age}= 23.88, SD= 5.46). In terms of ethnic composition, 71% of offenders were Caucasian and 26% were Aboriginal.

[11] These offenders ranged in age from 18 to 49 years (M_{age}= 23.91, SD= 5.46). In terms of ethnic composition, 53% of the offenders were Caucasian and 28% were Aboriginal.

Mental health and psychological functioning

A Multivariate Analysis of Variance (MANOVA) was conducted with the six psychological/mental health functioning factors as the dependent variables (DVs). This analysis indicated that there were significant between-group differences on a combination of psychological functioning factors entered into the first MANOVA (F(6,145)=8.25, p =.0001). Follow-up univariate analyses of variance (ANOVA) revealed several significant factors (see Figure 2 for group means; see Appendix B for complete table).

Figure 2: Psychological/Mental Health Functioning Factors



Note:

Factor 1: Externalizing and Social Cognitive Problems (p <.0001)
Factor 2: Substance Abuse
Factor 3: Internalizing and Victimized with Psychiatric Problems (p <.0001)
Factor 4: Dysfunctional Family Relationships (p <.001)
Factor 5: Lack of Education and Cognitive Functioning Problems

[12] Scheduled offences are composed of more violent, person-based crimes including sexual and more serious drug-related offences.

Factor 6: High Criminal Risk ($p < .0001$)

To begin with, attempters were rated as having more externalizing and social cognitive problems ($F(1,150)=15.18$, $p=.0001$; $r^2=.09$) and more internalizing and psychiatric functioning problems ($F(1,150)=23.13$, $p=.0001$; $r^2=.13$). The attempter group was also rated as having more family functioning problems ($F(1,150)=13.12$, $p<.001$; $r^2=.08$) and as more 'high criminal risk' in general ($F(1,150)=30.61$, $p=.0001$; $r^2=.17$). There was also a trend for attempters to have more substance abuse problems than the matched comparison group ($F(,150)=4.85$, $p<.05$; $r^2=.03$). Examination of the proportion of variance accounted for indicates that the high criminal risk factor was most important in differentiating the groups (17%), followed by the existence of internalizing and psychiatric problems (13%).

Institutional adjustment

To assess group differences in institutional functioning, offenders' incident reports for the present sentence were examined (see Table 4). An analysis of variance (ANOVA) indicated that attempters had *more* incident reports filed during the present sentence ($F(1,150)=-26.24$, $p<.0001$; $r^2=.15$). This finding is particularly interesting in light of the fact that there were no significant between-group differences for sentence length (recall that sentence length was used as a matching variable).

Table 4: Group Means for Incident Reports by Type

Factor	Attempter	Comparison
Mean Number of Incidents****	8.80	1.30
Violent Acts***	1.25	.22
Contraband Related***	1.20	.14
Participation in Disturbances**	.25	.01
Escape Related Incidents***	.18	.01
Requests for Protective Custody**	.26	.03
Substance Abuse Related	.25	.04
Disciplinary	1.14	.40
Victimized	.43	.13

Note: ** p.<.01, *** p.<.001, **** p.<.0001

To examine the *differential importance* of certain type of incidents, a MANOVA was run with the eight incident variables serving as the DVs (see Table 4).

This analysis revealed significant between-group differences on the incident variables ($F(8,143)=3.89$, $p<.001$). Overall, the attempters had much greater institutional adjustment problems. Follow-up univariate analyses revealed that attempters had a higher average number of incidents for violent acts ($F(1,150)=11.01$, $p<.001$; $r^2=.07$), contraband-related incidents ($F(1,150)=11.97$, $p<.001$; $r^2=.07$), participation in disturbances ($F(1,150)=6.01$, $p<.01$; $r^2=.04$), escape-related incidents ($F(1,150)=11.58$, $p<.001$; $r^2=.07$), requests for protective custody ($F(1,150)=7.86$, $p<.01$; $r^2=.05$), and substance abuse related incidents ($F(1,150)=6.46$, $p<.02$; $r^2=.04$). There was also a trend toward greater involvement in disciplinary incidents ($F(1,150)=3.54$, $p=.06$; $r^2=.02$) and for the attempter group to be more victimized $F(1,150)=6.12$, $p<.05$; $r^2=.04$).

SUMMARY OF PHASE 1 AND 2 FINDINGS

With regards to a description of offenders who attempt suicide, these findings were consistent with previous research. Offenders who attempted suicide were predominantly young unmarried Caucasian men who had committed person-focused as well as property offences. Many of these offenders were serving short sentences (less than 6 years), *but* many more attempters than non-attempters were also serving long sentences. Moreover, attempters had been classified as being higher risk at intake (i.e., at higher security levels). Interestingly, previous findings concerning the bimodal distribution of age with regard to suicide were not supported in the present study. Specifically, older offenders were *not* more likely to attempt suicide.

In addition, based on these data, there were group differences in marital status. However, a closer look at the data revealed that the association between marital status and suicide attempts was mediated by age. In fact, there was no *direct* association between marital status and suicide attempts after age was controlled for in the analyses. These finding suggest that marital status is more associated with an offender's age at admission than his risk for suicide. Interestingly, these results differ greatly from reports based on non-offender samples.

Psychological functioning information assessed at intake differentiated offenders who *later* attempted suicide from those who did not. In fact, attempters displayed more externalizing and internalizing problems and had more extensive psychiatric histories than offenders of a similar age at admission, who had committed similar offences and who had similar sentence lengths. Male attempters were also found to have dysfunctional families. Thus, offenders' psychological functioning and the quality of their familial social supports, even assessed at admission to federal institutions, differentiated attempters from non-attempters.

Assessments conducted at intake also indicated that these offenders were higher criminal risk than the comparison group (e.g., more extensive criminal histories and more discipline problems). Moreover, within their current sentence, attempters had a greater number of incident reports, particularly violent, contraband-related, and escape-related incidents than non-attempters. Extrapolating from these findings, we suggest that attempters have more problems adjusting within the institution. Taken together, these findings are interesting, and indicate that the effect of adjustment difficulties and high criminal risk status are stable over time.

EFFICACY OF THE SUICIDE POTENTIAL SCALE FOR LONG-TERM ASSESSMENT OF SUICIDE RISK

The second goal of this study was to determine if items from the suicide potential scale could be used in a predictive manner. That is identifying those offenders, who, while maybe not necessarily high risk for engaging in suicidal behaviour during the intake process, but could be at increased risk for these behaviours later in their sentence. The first step toward this goal was to undertake an initial examination of the psychometric properties of the scale. Second, we ran predictive analyses to determine if items from the scale could be used to predict suicide attempts that occurred later in the sentence.

Psychometric Properties

Initially, we sought to examine some of the characteristics and psychometric properties of the scale. There were essentially three aspects explored: internal consistency; discriminant validity; and ceiling and floor effects.

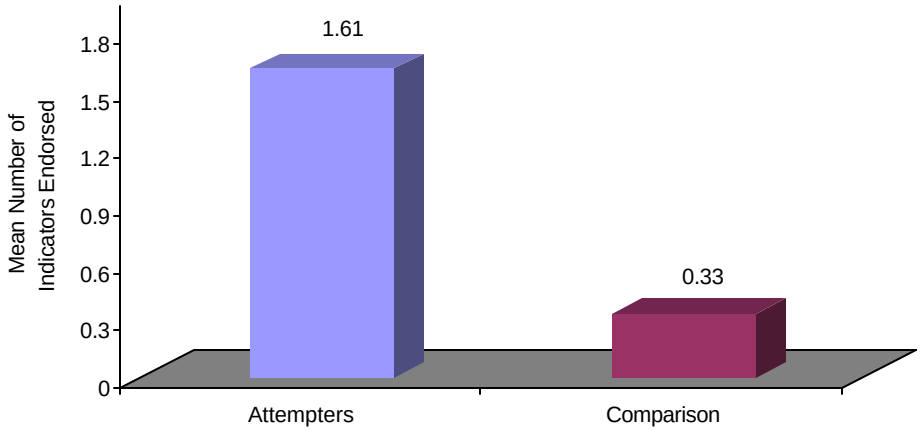
Internal Consistency

Cronbach's alpha, a measure of internal consistency is used to determine whether the indicators of a scale are measuring a single construct. Analyses indicated that the scale was moderately consistent (overall alpha = .77); individual indicator coefficients ranged from .77 to .81. Thus, this scale has the ability to assess the single construct of suicide risk.

Discriminant validity

We also sought to determine if scores on this scale could differentiate offenders whom later attempted suicide from those who did not. attempters from non-attempters. A significant ANOVA indicated that the attempter group had a higher mean total-score on the suicide potential scale than the comparison group ($F(1, 149)=26.66$, $p =.0001$; $r^2=.17$) (see Figure 3). Moreover, this score accounted for 17% of the variance between-groups. Thus, total scores on the present scale did in fact discriminate between offenders who did and did not attempt suicide.

Figure 3: Mean Score on the Suicide Potential Scale by Group



Ceiling and floor effects

Finally, rates of endorsement were examined for ceiling and floor effects. Examination of the overall rates of endorsement indicated that there were no ceiling effects for any indicators (i.e., over 80% endorsement rate; see Table 5). *Six* of the indicators were endorsed for less than 10% of the entire sample (i.e., attempters and non-attempters). The remaining three indicators were endorsed for more than 10% of the entire sample (attempters and comparison offenders): 1) may be suicidal (10.6%); 2) previous suicide attempt (35.5%); and 3) recent psychological and/or psychiatric intervention (23.0%).

Table 5: Indicators of the Suicide Potential Scale

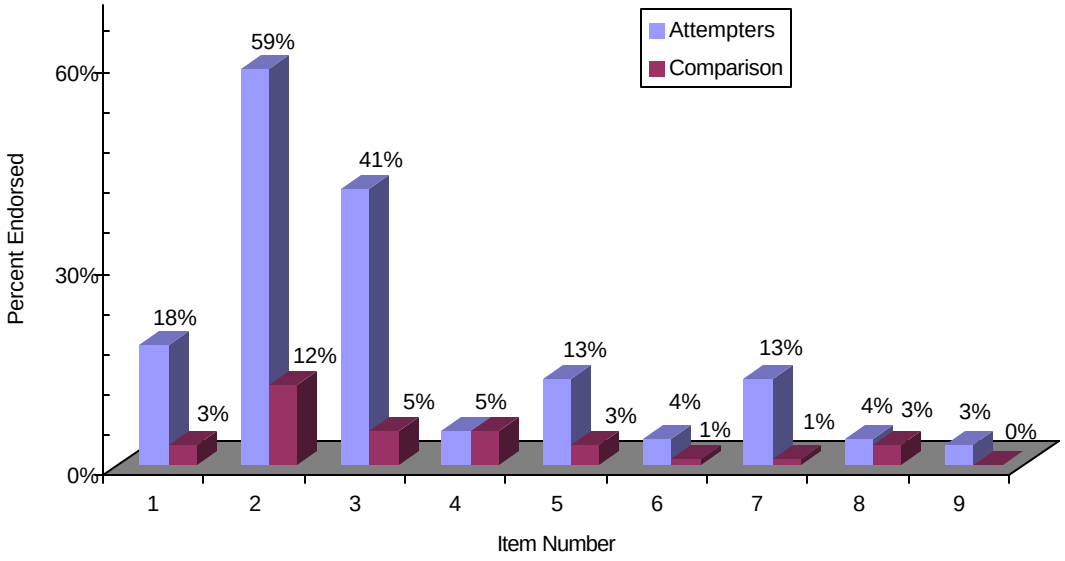
Indicator (scored as present/absent)	% Endorsed (n=152)
1. May be suicidal.	10.6
2. Previous suicide attempt.	35.5
3. Recent psychological/psychiatric intervention.	23.0
4. Recent loss of a relative/spouse.	5.3
5. Experiencing major problems (i.e. legal).	7.9
6. Currently under influence of alcohol/drugs.	2.6
7. Signs of depression.	7.3
8. Expressed suicidal ideation.	3.3

9. Has a suicide plan.	1.3

Group Differences on Individual Indicators of the Suicide Potential Scale

Chi-square analyses were run to determine whether there were indicators more frequently endorsed for attempters than for non-attempters.[13] These secondary analyses indicated that attempters were more likely to have been endorsed for four of the nine indicators: may be suicidal; has made a previous suicide attempt; has undergone a recent psychological or psychiatric intervention; and shows signs of depression (see Figure 4). These findings suggest that there *are* characteristics, important to the assessment of longer-term suicide risk, that can be reliably assessed during the routine intake process.

Figure 4: Indicators from the Suicide Risk Assessment Scale



Note:

1. The offender may be suicidal ($p < .01$).
2. The offender has made a previous suicide attempt ($p < .001$).
3. The offender has undergone recent psychological/psychiatric intervention ($p < .001$).
4. The offenders has experienced recent loss of a relative/spouse.
5. The offender is presently experiencing major problems (i.e. legal).
6. The offender is currently under influence of alcohol/drugs.
7. The offender shows signs of depression ($p < .01$).
8. The offender has expressed suicidal ideation.
9. The offender has a suicide plan.

Predicting Suicide Attempts

The final analysis in this study involved an exploratory logistical regression with the focused attempter and matched comparison groups to determine the *predictive* validity of the current risk assessment.

For this analysis the suicide potential scale, in addition to static predictors[14] such as criminal history, family history, mental health and psychological functioning and dynamic institutional adjustment factors were included in the model.[15] A forward procedure was used to determine that the full model included the two indicators of the suicide potential scale (as in Step 1) but, having a history of discipline problems, prior adult convictions, and incidents relating to contraband also contributed to the prediction model (see Table 6). According to the odds ratios, offenders who had participated in a psychological/psychiatric intervention just prior to intake were 21 times more likely to have attempted suicide in the current sentence. Those who had a history of discipline problems were 19 times more likely to attempt suicide. Offenders who had made a previous suicide attempt were 9 times more likely to have attempted suicide again.[16]

It should be noted that predictive analyses are not equivalent to prediction of offenders' suicidal behaviour. These findings do, however, provide an indication of the utility of improving existing suicide assessment procedures. Moreover, the variables (e.g., previous suicide attempts, discipline problems etc.,) found to be important for statistical prediction provide a definite starting point for a new generation in suicide risk assessment.

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[13] The alpha level denoting a significant finding was made more stringent (i.e., $p < .01$ rather than $p < .05$) to account for the number of chi-square analyses run in this section.

[14] For this analysis, the factors created for previous analyses were not used. Instead the separate indicators making up each factor was entered. This procedure allowed us to determine which *specific* aspects of mental health and functioning were important to the prediction of suicide attempts.

[15] Although age at admission, sentence length, and type of offence committed are static variables thought to be important to the assessment of suicide risk, they were not included in the logistical regression analyses. This restriction was considered prudent because these attributes had been used to purposefully restrict the comparison group (by a matching procedure; see section on Sample Selection). Thus, the variance of these characteristics was artificially limited for the comparison group. As a result findings regarding the importance of these variables to prediction would have been difficult to interpret.

Table 6: Variables That Significantly Predicted Current Suicide Attempts

Variable	Odds Ratio
Recent Psychological/Psychiatric Intervention***	21
Discipline Problems*	19
Previous Suicide Attempt***	9
Incidents Related to Contraband**	3
Previous Adult Convictions**	2

Note: * p.<.05, ** p.<.01, *** p.<.001, **** p.<.0001

Table 7: Predictive Efficacy of the Suicide Potential Scale

Logistical Regression	Model
Number of Indicators in the Model	5
Concordance Rate	92%
False Positive Rate	14%
False Negative Rate	20%

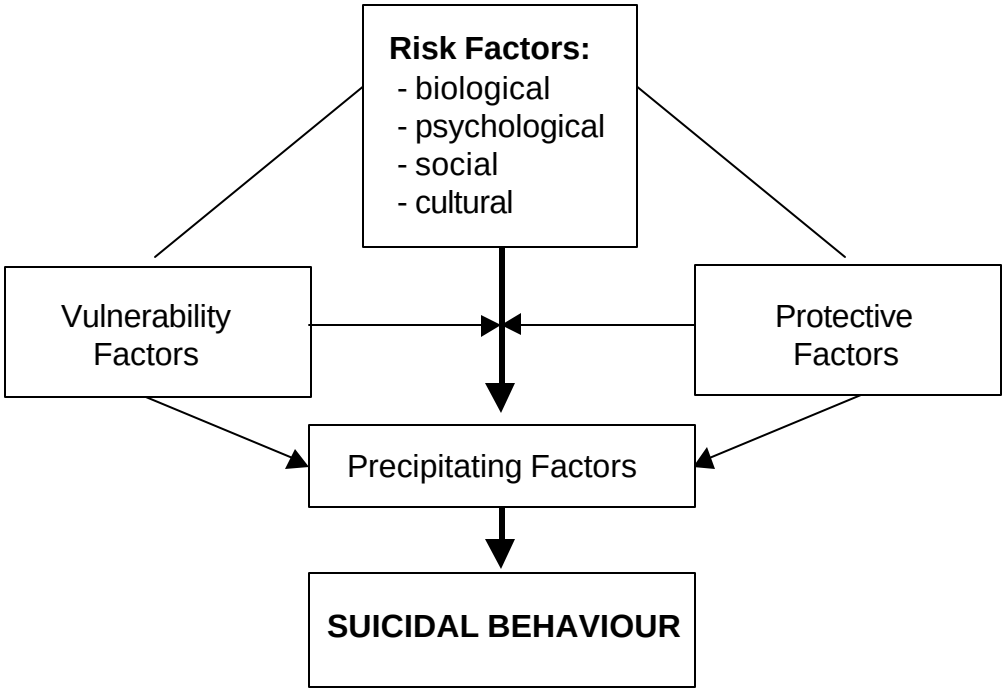
The existing suicide potential scale seems to be an adequate measure for flagging offenders at risk of engaging in suicidal behaviour at intake. Certainly it meets a standard of care. Moreover, findings from initial analyses indicate that this scale may assist in the prediction of suicide attempts that occur later in the sentence.

[16] For each of these five variables, the existence or increased severity of the variable led to the prediction of current suicide attempt.

DISCUSSION

The importance of intake assessment of suicide risk notwithstanding, we need to recognize that suicidal ideation and thus risk for engaging in suicidal behaviour is not a stable phenomenon. Offenders' level of risk will fluctuate in response to a range of situations and experiences. Viewing suicide risk as dynamic requires an adjustment in the manner in which offenders are managed as well as assessed. Previous research has been lacking in direction; this has limited research in the area to descriptions of static factors. Research on the suicidal behaviour of offenders needs to be re-conceptualized within a theoretical framework. In turn, this research could be used to develop empirically *and* theoretically sound assessment and management practices. One model that holds much promise for the future is the process model of Heikkinen and colleagues (1993; Figure 5). This model provides a framework for suicide risk assessment and management and would be appropriate to apply to research on suicide in prison.

Figure 5: A Process Model of Suicide



The Process of Suicidal Ideation and Behaviour

Suicide as a Process

Suicide is seen as a process, and suicidal ideation and risk for suicide are seen as dynamic rather than static. As a result, risk needs to be monitored throughout an offender's incarceration, and case-specific precipitating factors need to be identified. Assessing suicide risk at intake would then be a first step in an ongoing process that includes both long- and short-term assessment.

Vulnerability and Protective Factors

An important part of the intake assessment and case management process is to identify offenders' vulnerabilities that lead to criminal behaviour and maladjustment while in the community as well as the strengths that mitigate against these outcomes. An effort is then

made to assist in addressing their particular areas of need, intent on maximizing the likelihood of their safe and successful reintegration into society. These operational procedures are directly linked to the objectives of CSC. Thus, the inclusion of vulnerability and protective factors within the suicide process model is completely consistent with the mission and mandate of CSC.

Vulnerability Factors. If those offenders who attempt suicide are also the ones having great difficulty adjusting to the institutional environment then it is even more important to deal with the individual characteristics and vulnerabilities of these offenders. Most notably, these offenders appear to have poorly developed coping skills. It is also likely that some of the factors generally identified as problematic for offenders also contribute to their risk of engaging in suicidal behaviour (e.g., poor coping skills). Further research is needed to determine particular vulnerability factors that would function to increase risk for engaging in suicidal behaviour. These areas could then be integrated into offenders' correctional plans.

Protective Factors. The inclusion of this aspect encourages identification of offenders' strengths and sources of resilience. The inclusion of factors that may reduce suicidal ideation and moderate the effect of negative life events also encourages us to explore differences between those offenders who are at risk for suicide but do not engage in suicidal behaviour compared to those who do. Accounting for their strengths when dealing with offenders' risk status is consistent with the mission of CSC and could have far-reaching consequences on offenders' abilities to successfully reintegrate into society. For example, if we are able to help offenders to develop strong social problem-solving skills and effective prosocial coping skills within the prison, we may be able to reduce their suicide risk. These skills would also facilitate an offenders' adaptation within the community as well. For these reasons, we might expect other correctional interventions, such as Living Skills, to reduce the incidence of suicidal behaviour. This could be an interesting avenue for further research.

Precipitants and the Environment

The multidimensional emphasis of this model serves to highlight the fact that suicidal ideation will fluctuate in response to precipitating factors. These factors can be within the individual *and* in the environment. The prison environment has been acknowledged to have many unique stressors not present in the community. Two of these include static aspects of the environment and precipitants.

First, stressors may include static aspects of the environment and social situations offenders may experience on a regular basis (with other offenders as well as with correctional staff), lack of control, and the high degree of uncertainty offenders feel while incarcerated. For example, a recent Canadian survey indicated that a majority of Correctional Officers (i.e., front line staff) had little empathy for offenders and held punitive views of corrections. Moreover, only half of these officers supported offender rehabilitation (Larivière & Robinson, 1996). Offenders also remark on their lack of positive, supportive relations with correctional staff (Price Waterhouse, 1996). Such a negative mindset and the resulting social interactions would definitely impact on their perceptions of the environment and their daily stress levels. In addition, more than a third of offenders surveyed indicated a significant degree of continuous stress and depression due to environmental and institutional experiences (Price Waterhouse, 1996).

Second, there are many precipitating events that offenders may experience (e.g., parole reviews, personal safety issues) which may impact on their level of suicidal ideation. For example, findings from the Inmate Survey conducted in federal institutions in 1995 indicated that the majority of offenders (particularly those in maximum security institutions) feared for their personal safety and felt that institutional decisions were not handled fairly (i.e., transfers and classification; Price Waterhouse, 1996).

In sum, there is a need for further research on suicidal behaviour in prison, particularly that which incorporates static as well as dynamic characteristics of the individual and the environment. Moreover, in this research, particular attention should be given to offenders'

functioning proximal to their engagement in suicidal behaviour. Identification of these factors will help us to develop interventions for use at critical crisis points.

Limitations and Recommendations

One of the main limitations of the present study was a reliance on incident reports to identify offenders who attempted suicide. Currently, a Correctional Officer logs an incident report when offenders attempt or commit self-injurious behaviours. However, this form is somewhat general; as a result the officer in charge makes the differentiation between self-harm and suicidal behaviours. Unfortunately, there is much variation in these reports, as staff may interpret events and motivations differently.

In order to potentially reduce the variation across persons and facilities regarding how behaviours are labelled as suicide attempts; a standardized incident report for self-injurious behaviours could be instituted. This form would include an assessment of method, severity, intent, precipitating factors, and the action taken. In this manner we would have a more objective classification and identification of different types of self-injurious behaviours.

Along with training to complete the new reports, a program could be implemented for institutional staff that addresses negative attitudes and promotes empathy and sensitivity toward offenders. This program would also be used to increase staff awareness of the dangers of labelling suicidal behaviour as manipulative. Haycock (1992) holds that this approach is counterproductive and that " the term manipulation is simply useless in understanding and destructive in attempting to manage the suicidal behaviour of offenders" (p. 9-10).

A second drawback to this study was the fact that offenders were not queried directly, all information was taken from an automated database. Thus, there is likely much variability in the quality of the data (e.g., thoroughness). Moreover, in order to assess and manage suicide risk more accurately, we should be examining suicidal behaviour from the

perspective of the persons we are studying - the offenders themselves. In future investigations, offenders should be included in the data collection process. The current research however, might form the framework for discussion with practitioners in the development of research-based procedures for this undertaking.

Research Initiatives

Although an essential part of offender management protocols, intervention was not a main focus of the present research. We sought to expand our knowledge base and to apply more elaborate analyses and perspectives to the examination of suicidal behaviour in prison. Much more research is needed to further elucidate the meaning of suicidal behaviour by offenders. Some initial suggestions for directions for this research are provided below.

To begin with, we need to replicate the findings of this study and expand the pool of candidate variables that may be important to the development of a new suicide risk assessment tool. Consultation with correctional staff and stakeholders would be an important part of this process.

Second, only male offenders were included in this study; we need to conduct a detailed examination of the suicidal behaviours of women offenders as well. In society at large, these behaviours by women seem to be qualitatively different from that of men in terms of the act as well as the underlying meaning of the behaviour. Development of a women-centred multi-faceted approach to the study of suicidal behaviour by federally sentenced women is a priority, and will be addressed in the near future.

Third, if we are to apply a process model to our conceptualization of suicide risk, our focus needs to widen to include an assessment of dynamic as well as static factors associated with suicide as well as precipitating factors. Presently, a study is being conducted to address these concerns in a very preliminary manner: a considerable investment in time and resources would be required in order to complete a thorough investigation.

Finally, only suicide attempts were examined in this study. However, it has been argued that different levels of suicidal ideation should be identified when assessing offenders' suicide risk (Eyland, Corben, & Barton, 1997). A first step in this process would be to determine whether offenders who attempt suicide differ significantly from those who complete the act. This information could then be used for developing differential management and crisis intervention protocols. This issue is being addressed presently; a report detailing these findings will be available in the near future.

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Appendix A
Description of the Variables used in the Suicide Analyses

Initial Variables Created:

edu_comp higher values indicate less education
variable composed of:
(3) empres01 (under grade8)
(2) empres02 (under grade 10)
(1) empres03 (no high school diploma)

pr_adcon degree of number of adult convictions (higher is more serious)
(0) all are 0 (no previous convictions
(1) acrres01 (adult court)
(1) acrres06 (one previous convictions)
(2) acrres05 (2 to 4)
(3) acrres04 (5 to 9)
(4) acrres03 (10 to 14)
(5) acrres02 (15 or more)

pr_yccon degree of number of adult convictions (higher is more serious)
(0) all are 0 (no previous convictions
(1) ycrres01 (youth court)
(1) ycrres06 (one previous convictions)
(2) ycrres05 (2 to 4)
(3) ycrres04 (5 to 9)
(4) ycrres03 (10 to 14)
(5) ycrres02 (15 or more)

cogprob cognitive problems (higher is more serious)
proportion of:
empres04 (learning difficulties)
empres05 (learning disability)
empres07 (memory problems)
empres08 (concentration problems)
empres09 (reading problems)
empres10 (writing problem)
empres11 (numeracy problem)
perres35 (mental deficiencies)

empprob employment problems (higher is more serious)
proportion of:
empres13 (no skill area \trade \profession)
empres16 (unemployed at arrest at arrest)
empres17 (unemployed 90% or more)
empres18(unemployed 50% or more)
empres19 (unstable job history)
empres22 (no employment history)
empres27 (fired)

fam_ss poor social support from family (higher is more problems)
proportion of:
famres01 (unattached)
famres02 (absent moth or equivalent)
famres04 (absent father or equivalent)
famres08 (sibling poor)
famres09 (other relative poor)
famres11 (unmarried currently)
famres12 (married/common law past)
perres03 (family problems-current)

dysf_fam dysfunctional family problems -past and present (higher is more serious)
proportion of:
famres03 (maternal poor)
famres05 (paternal poor)
famres06 (dysfunctional parents)
famres07 (parents involved in spousal abuse)
famres15 (sexual problems past or present)
famres16 (communication problems)
famres17 (victim of spousal abuse)
famres26 (family functioning poor)

intprob internalizing problems (higher is more serious)
proportion of:
assres01 (socially isolated)
assres10 (easily led)
perres18 (assertion problem)
perres25 (worries unreasonably)

victmzd victimized (higher is more serious)
proportion of:
assres09(victimized)
famres17(victim of spousal abuse)

victmzr victimizer(higher is more serious)
proportion of:
famres18 (perpetrator of spousal abuse)
famres27 (law violation-child abuse)
famres28 (law violation-incest)
incest (committed incest)

comprob community functioning problems
proportion of:
comres15 (no hobbies)
comres16 (no organized activity)
comres17 (unaware of social services)
comres18 (used social assistance)
assres07 (on membership in prosocial groups)

no_sawr insight and empathy and self-awareness problems
proportion of:
perres01 (self aggrandizement)
perres12 (poor regard for others)
perres13 (socially unaware)
perres15 (empathy problem)
perres16 (inflexible)
perres28 (non-reflective)
perres29 (conscientiousness low)

prob_sol poor social problem solving;
proportion of:
assres11 (communication problem)
perres11 (unrealistic goal setting)
perres19 (poor stress management)
perres20 (poor conflict resolution)

impulsv impulsivity thrill-seeking and risk taking, manipulative
proportion of:
perres14 (impulsive)
perres26 (risk taking problematic)
perres27 (thrill seeking)
perres30 (manipulative)

angry angry hostile and aggressive with low frustration tolerance
proportion of:
perres17 (aggressive)
perres23 (low frustration tolerance)
perres24 (hostility problem)

psychia psychiatric history
proportion of:
perres36 (diagnosed past)
perres37 (diagnosed current)
perres39 (prescribed medicine in past)
perres40 (prescribed medicine current)
perres41 (hospitalized past)
perres42 (hospitalized current)
perres43 (outpatient past)
perres44 (outpatient current)
perres45 (program participation past)
perres46 (program participation current)

alchl alcohol abuse
proportion of:
subres02 (drink frequent)
subres01 (early age drinking)
subres03 (drink binges)
subres05 (abuses alcohol)

drug_ab drug abuse
proportion of:
subres18 (abuses drugs)
subres15 (frequent drug use)
subres14 (early age drug use)

discprb prison problems
proportion of:
ycrres11 (community based discipline fail)
ycrres12 (disciplinary transfer in open security)
ycrres13 (disciplinary reprimand while in secure custody)
ycrres14 (attempted escape from secure custody)
ycrres15 (transferred from secure to adult)
acrres11 (community-based sanctions fail)
acrres12 (seg. for disciplinary infractions)
acrres13 (attempted escape /ual /escapes)
acrres14 (reclassification to higher level of custody)
acrres15 (fail on conditional release)
acrres16 (< 6 mos. since last incarceration)

suic_to all suicide indicators
proportion of:
suires01 (inmate may be suicidal)
suires02 (inmate has previous suicide attempt)
suires03 (inmate has psychological/psychiatric)
suires04 (loss of relative due to death)
suires05 (major problem - i.e., legal sit)
suires06 (influence of alcohol or drug)
suires07 (signs of depression)
suires08 (expressed suicide intent)
suires09 (has suicide plan)

Factors created from factor analyses[17]

Externalizing and Social Cognitive Problems

Composed of:
- Low self-awareness and empathy problems
- Social problem-solving
- Impulsivity
- Anger

Substance Abuse

Composed of:
- Alcohol abuse problems
- Drug abuse problems

Internalizing and Victimized with Psychiatric Problems

Composed of:
- Social isolation and internalization
- Victimization
- Psychiatric problems

Dysfunctional Family Relationships

Composed of:
- Victimizer
- Poor social support
- Dysfunctional family relationships

Lack of Education and Cognitive Functioning Problems

Composed of:
- Cognitive problems
- Education completed

[17] Note: All factors were divided by the number of variables that made up the factor.

High Criminal Risk

Composed of:

- Lack of community functioning
- Employment problems
- Discipline problems
- Previous adult convictions
- Previous Youth convictions

Appendix B:Table of Psychological/Mental Health Functioning Factors by Group

Factor	Attempter (SD)	Comparison (SD)
Externalizing and Social Cognitive Problems****	.59(.24)	.44(.24)
Substance Abuse	.68(.33)	.56(.34)
Internalizing/Victimized with Psychiatric Problems****	.34(.21)	.19(.16)
Dysfunctional Family Relationships***	.30(.16)	.21(.14)
Education and Cognitive Problems	1.11(.63)	1.10(.59)
High Criminal Risk****	1.36(.45)	.92(.54)

Note: ** p.<.01, *** p.<.001, **** p.<.0001