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SELF-REPORTS OF PARASUICIDAL BEHAVIOURS AND SOCIAL DESIRABILITY EFFECTS IN A CORRECTIONAL SETTING.

BY

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M.A., Simon Fraser University, 1980

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Self-reports of Parasuicidal Behaviours and Social Desirability Effects in a Correctional Setting.

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ABSTRACT

Suicide is the leading cause of death in Canadian prisons. Reports in the literature recommend the development of questionnaires to screen for individuals at high risk for suicide. A history of parasuicide is the best statistical and clinical predictor of future self-destructive acts, and therefore represents an obvious measure for inclusion in self-report screening instruments.

The validity of differentiating prison inmates according to self-reports of parasuicidal behaviour and suicidal intent was explored by classifying 128 inmates into four groups: Serious Attempters (SA), Non-serious Attempters (NS), Self-mutilators (SM), or No History (NoHx). Compared to the NoHx group, the SA group had more serious current attitudes and intentions towards death by suicide, more depressive symptoms, fewer important reasons for living, and higher scores on the Suicide Probability Scale. The NS group had more negative self-evaluation, inability to cope, moderate depressive symptomatology, high scores on the Suicide Probability Scale and low social desirability scores (Edwards Scale). Compared to the NS group, the SA group had more definite suicide plans and believed that they were likely to die, while the NS group reported more self-devaluation. There were only minor differences between the self-mutilation group and the NoHx group. Discriminant Classification Analysis weights proved to be unstable with

only 38% overall accuracy attained upon cross-validation. The use of parasuicide typologies among prison inmates needs to be addressed prospectively, with more refined predictor and criterion variables.

A secondary study found that social desirability (Edwards SD Scale) affects the relationship between hopelessness and self-reported parasuicidal behaviours differently, depending upon the number and nature of the postdiction variables used and the choice of criterion. Although the meaning and predictive utility of Edwards SD scores remains open to interpretation, low SD scores may have utility as a marker for poor psychological adjustment.

Because of issues related to inmate classification and program assignment, predictive scales developed under research conditions of anonymity and confidentiality may not generalize to administrative use in prisons unless social desirability factors are addressed.

ACKNOWLEDGEMENT

The author gratefully acknowledges the assistance of the Psychology Department, Dr. R. Ley, and Mr. Vern Loewen, in the completion of this project. Without the moral and financial support of family and friends the task would have been impossible. This work is dedicated to the memory of my mother, Eugenia Myles, and my son, Robin, both of whom died before they could see any returns from our combined sacrifices.

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INTRODUCTION

The suicide rate for Canadian prison inmates is six times greater than that which exists for the general population. More dramatically, suicide represents the leading cause of death within penal settings within this country (Burtch and Ericson, 1979). Amongst this group, British Columbian prisoners have the highest rates of self-inflicted injury (Correctional Services Canada, 1981). There have been recommendations that penal institutions develop programs to identify prisoners at high risk for suicide (Smialek and Spitz, 1978). Inmates who attempt suicide present complex clinical, psychosocial, legal and ethical challenges for clinicians. Boyarsky, Flancbaum and Trooskin (1988) proposed that programs should identify prisoners at risk for attempted suicide, in view of the serious physical complications and sequelae associated with unsuccessful hangings, for instance.

Locally, Denoon (1983) proposed a focus on early detection/identification of potential suicides in the British Columbia (B.C.) provincial correctional system. He recommended the development of a psychological admission questionnaire, which would screen for background and symptom information used to identify "potentially suicidal" inmates.

A history of previous suicidal behaviour, or

parasuicide (Kreitman, 1977), would be an obvious item of clinical importance. Of all clinically defined patient groups, parasuicides carry the highest risk of subsequent suicide (Hawton, 1987; Kreitman, 1986). As Goldberg (1987) notes, from a legal perspective, a suicide attempt may be seen as prima facie evidence of suicide risk, and requires that the patient be appropriately managed to reduce risk to himself and the institution. Further, appellate case law indicates that an adequate intake history should be obtained, and the fact that a patient was never asked about suicidal behaviour does not mean that staff should not have known about it (Goldberg, 1987).

The development of a predictive instrument of the type suggested by Denoon (1983) would require prospective validation. Before embarking on such time-consuming and expensive research, there are a number of methodological issues that should be addressed.

In the absence of any systematic suicide research in the prison population (Burtch and Ericson, 1979; Gaston, 1979), there is no evidence that general concepts about suicide and parasuicide can be applied to prison inmates. Additionally, there is little evidence that standard assessment instruments have utility in predicting prison adjustment (Carbonell, Megargee and Moorehead, 1984), let alone in predicting suicide.

Kreitman (1977) states that the majority of the suicide literature has been validated in studies of hospitalized psychiatric patients. Kreitman (1986) and Litman (1976) have suggested that prisons may represent unique settings, to which generalizations may not hold, and where specific predictive factors may need to be developed. Prisons represent social microcosms wherein values, stresses and reality often differ starkly from conditions in the outside world. Toch (1975) and Gaston (1979) have noted the suicidogenic potential of the prison environment. Simpson (1976) suggests that prison self-injury can be an expression of self-defence, to end ill-treatment, or a celebration of humiliation, when there is little else to attack but oneself.

A history of parasuicide, the best statistical and clinical predictor of suicidal risk, may lose its predictive potency in a pathogenic environment populated by pathological individuals, who are already at high risk by virtue of their personal characteristics and backgrounds. For instance, research has repeatedly demonstrated an association between a criminal record and both suicide and parasuicide, particularly for repeaters (Kreitman, 1977; Lettieri, 1976; Morgan, 1979). Character, or personality disorders have been strongly associated with parasuicide and suicide, especially antisocial personality disorder and borderline personality

disorder (Bagley and Greer, 1976; Dingman and McGlashan, 1988; Fyer, Frances, Sullivan, Hurt and Clarkin, 1988; Kreitman, 1986; Morgan, 1979). In two B.C. prison samples, Hare (1983) reported a 39% prevalence rate of antisocial personality disorder according to DSM III criteria. In a young offender sample, Alessi, McManus, Brickman and Grapentine (1984) noted a high incidence of borderline personality disorder, associated with suicide attempts.

There appear to be high rates of mental disorder among prisoners in the Hare (1983) study. Inmates received an average of five DSM III diagnoses with substance abuse accounting for 48.9% of the total number of diagnoses. The association between substance abuse and increased suicide risk has been well documented elsewhere (Hawton, 1987; Kreitman, 1986).

Noting the lack of empirical research on mental illness in prisons, Steadman, Fabisiak, Droskin, and Holohean (1987) found that roughly 25% of the New York State prison population have significant mental disabilities that require periodic services. Robertson (1987) demonstrated prospectively that a high proportion of mentally abnormal offenders in Britain die by suicide.

Perhaps the clearest suggestion that prison suicide may involve different risk factors comes from Backett's (1987) survey of Scottish prison suicides. He found that

the vast majority had primary diagnoses of sociopathic personality disorder and/or substance abuse, whereas in the general population, the most typical diagnosis among suicides is affective disorder (Roy, 1986). The difference in diagnoses is noteworthy, in light of Hare's (1983) suggestion that individuals with psychopathy rarely commit suicide.

A major survey of suicide and self-injury in Canadian prisons was conducted in the hopes of identifying and being able to predict inmates likely to harm themselves. The results were not encouraging, and the conclusion was that inmates who self-injure are not readily identified from the general population (Correctional Services Canada, 1981). In an earlier study of Canadian prison suicides, Burtch and Ericson (1979) stated that the inmate suicides could not be as readily distinguished by a number of variables as the available literature suggested.

At present, it is not clear whether the suicide rate in prisons is high because of environmental characteristics, or individual characteristics, or because suicidal risk is more difficult to assess and predict due to validity problems. As a history of parasuicide is of statistical and clinical significance generally (Kreitman, 1977, 1986), it seems pertinent to examine its significance in the assessment of prison inmates. The focus of the present study is on the use of self-report

measures to classify prison inmates according to a typology of parasuicidal behaviour. The degree to which such classification concurs with risk factors reported in the literature will be examined.

A secondary focus of the current study relates to the validity of self-report instruments in assessing suicidal behaviour and risk. A recent debate has arisen in the literature over the extent to which self-report measures of risk factors such as hopelessness (Beck, Weissman, Lester and Trexler, 1974) are confounded by social desirability (SD) effects (Linehan and Nielsen, 1981, 1983; Petrie and Chamberlain, 1983; Nevid, 1983; McCrae and Costa, 1983; Strosahl, Linehan and Chiles, 1984). Subjects may bias their responses in such a way as to mask their true suicidal risk (Strosahl et al, 1984). In a prison setting, where the subjects may seem untrustworthy and unreliable by definition, potential SD bias in a suicide screening questionnaire merits serious consideration. While an extensive literature has developed around the issue of assessing the validity of inmates' self-reports (Walters, White and Greene 1988), with regards to malingering, there does not appear to be any research on the extent to which inmates might deny actual symptomatology, which is the primary concern in the social desirability debate (Strosahl et al 1984).

Attempts to replicate and extend findings in the

social desirability literature in a correctional sample will be described separately, in a second study included in this report.

PRISON SUICIDE RESEARCH

There is inconsistent usage of terminology in the literature. Because of ambiguity in the interpretation of the term "suicide attempt", Kreitman (1977) and others have adopted the use of the term parasuicide, which is defined as a non-fatal act in which an individual deliberately causes self-injury or ingests a substance in excess of any prescribed or therapeutic dosage. Terms such as suicide attempt, non-fatal deliberate self-harm (Morgan, 1979), or self-injury (Correctional Services Canada, 1981; Simpson, 1976) are subsumed in the category of parasuicide. In describing research findings, an attempt will be made to remain consistent with the terminology used by the researcher; for discussion related to the purposes of the present research report, the concept of parasuicide will be used. Concepts of suicide and terminology will be discussed more fully in a later section.

For American prisons, Lester (1987) has reported a male suicide rate of 24.6 per 100,000 per year for the 1978-1979 period. For death-row inmates, the rate was 146.5 per 100,000. The difference in rates is interesting

in view of the high security procedures on death-row (Lester, 1987). Smialek and Spitz (1978) reported a rate of 57.5 per 100,000 for American jails.

In Canada, Burtch and Ericson (1979) reported a general population (non-penal) rate of 14.2 per 100,000, and a prison population rate of 95.9 per 100,000. Correctional Services Canada (1981) reported a rate of 90 per 100,000 inmate years served (1974 to 1978), with a rate of 160 per 100,000 for maximum security institutions.

The Corrections Branch of the Ministry of Attorney General for British Columbia (B.C.) conducted a survey of suicides in the provincial system for the years 1970 - 1980 (Denoon, 1983). During that period, there were 35 suicides in the system, with the Lower Mainland Regional Correctional Centre (LMRCC) accounting for 68.5% of the total. Denoon (1983) cites a suicide rate for the B.C. system of 34.6 per 100,000 admissions. This seems lower than the rate of 90 per 100,000 years served cited for the federal prison system (Correctional Services Canada, 1981), but the two rates are calculated differently. Denoon (1983) transformed the federal data to an admissions basis, and stated that the federal ratio was three times higher (145.6 per 100,000 admissions). However, it seems likely that the B.C. provincial rate would be higher if it were transformed on a per years basis, given the fact that provincial inmates tend to

serve shorter sentences than federal inmates, and many of them are actually on remand while awaiting trial. Additionally, Denoon's (1983) figures do not appear to take into account multiple admissions and transfers between institutions, which would inflate the admissions count; nor does he give normalized rates for LMRCC.

There are no good studies of the incidence of non-fatal self-injury, or parasuicide, in the general population literature (Simpson, 1976). The best estimate comes from an epidemiological study in London, Ontario, which suggested a rate of 730 per 100,000 (Ferrence, Jarvis, Johnson and Whitehead, 1976).

Within the prison environment, parasuicide takes on added significance due to its high prevalence. Toch (1975) states that even conservative figures reveal that the problem of self-injury is endemic and that nothing commensurate occurs in other settings. Toch (1975) goes so far as to suggest that if a problem even remotely similar arose in the outside world, it would provoke outrage and emergency intervention.

Toch (1975) cites data which suggests that rates of parasuicide (self-injury) range from 2,200 per 100,000 to 7,700 per 100,000 in prisons. These figures do not seem out of line with data reported by the Correctional Service of Canada, which reveal a rate of 4,400 per 100,000 inmate years for the entire system, with rates for individual

prisons ranging from a low of 2,700 per 100,000, to a high (for British Columbia inmates) of 8,200 per 100,000 inmate years (Correctional Services Canada, 1981).

Toch (1975) claimed that his figures suggested a problem of epidemic proportions. He provided further data on high risk settings which he claimed made the previous statistics seem conservative: 31.7% (31,700 per 100,000) of inmates in a prison mental hospital had injured themselves in prison. One wonders how Toch would respond to the statistic that British Columbian prisoners in segregation self-injure at the rate of 67,600 per 100,000 inmate years (Correctional Services Canada, 1981). The magnitude of the problem is heightened by the fact that both Toch (1975) and Correctional Services Canada (1981) point out that cases of self-injury tend to be under-reported.

Pattison and Kahan (1983) suggested that as many as 40% of antisocial individuals deliberately injure themselves in institutional settings. Ross and McKay (1979) cited research suggesting self-injury rates from 11.2% to 42% in various American prisons. In a young offender sample, Alessi, McManus, Brickman and Grapentine (1984) found that 62% of inmates had attempted suicide in the previous year.

With regards to parasuicide, Denoon (1983) cites LMRCC data showing 639 attempts between 1967 and 1978,

although he acknowledges that the informal recording of suicide attempts dropped off in the mid-1970s, and that statistics are unreliable because of the discretionary aspect of reporting incidents of self-injury. Thus, when Denoon (1983) suggests a "rough" ratio of 25 attempts to one suicide, that ratio might be considered to be a conservative under-estimate of the true ratio. Denoon (1983) notes that there were thirty recorded attempted suicides at LMRCC in 1981 (with three suicides), and forty recorded attempted suicides in the ten months ending October 30, 1982 (with no completed suicides). He does not offer any ratio of attempts per 100,000 admissions.

Parasuicidal behaviours, including wrist and forearm slashings, are noteworthy because they require a great deal of clinical attention and care (from physicians, nurses, and psychologists) and self-mutilating individuals present special patient management problems. Perhaps the most difficult management problem involves assessment of the risk of subsequent suicidal behaviour.

Within the general non-prison population, the base rate for repeated attempts has been estimated to range from 16% to 50% (Kreitman, 1976; Clum, Patsiokas, and Luscomb, 1979). In the Pokorny (1983) study, suicide attempters had a subsequent completed suicide rate of 1,702 per 100,000.

In the Canadian federal prison system, clinical

data from 1979 indicated that 34 of 158 parasuicides went on to self-inflict again within that year. This rate of 21% (21,000 per 100,000) is undoubtedly an under-estimate of the base rate for repeated parasuicide, as many of the inmates in the single incident category had probably self-inflicted in previous years, and were, in fact, multiple self-inflictors (Correctional Services Canada, 1981). The general literature suggests that roughly 50% of parasuicides have a previous history, and that 25% of males repeat within one year (Morgan, 1979).

Denoon (1983) offered no data on repeated parasuicide in the B.C. provincial system, although he did mention that 16 of 35 suicides had been preceded by a reported attempt.

There is no accurate research data on the proportion of prison suicides with a history of parasuicide in their backgrounds. Burtch and Ericson (1979) reported that 17.5% of the 75 prison suicides they studied were reported to have made previous suicide attempts. This is undoubtedly a misleading figure. The general literature indicates a history of parasuicide in 30 - 50% of completed suicides (Morgan, 1979), and an even higher rate (68%) in certain clinical groups (Fawcett, Scheftner, Clark, Hedeker, Gibbons, and Coryell, 1987).

There is a general clinical consensus that institutionalized persons, whether mental patients or

prisoners, are entitled to adequate protection from self-injurious impulses. Topp (1979), in a study of British prison suicides, found that 30% were actually in the prison hospital at the time of their suicide. Staff had been aware of possible suicidal inclinations in only 15% of the cases. Burtch and Ericson (1979) found that 65% of inmate suicides had not been under psychiatric care at the time of death, yet 78% had been previously depicted as having psychiatric/clinical difficulties. Denoon's (1983) observation of the need to screen inmates for background markers and psychiatric symptoms would appear to be well-founded.

While the three Canadian studies referred to above represent important contributions, they relied almost exclusively upon analyses of demographic, temporal, and situational factors, mostly without benefit of adequate comparison or control samples. Their conclusions were thus limited. As Morgan (1979) has noted, such concomitants of suicidal behaviour tended to have weak associations and low predictive validity.

The most striking feature of the literature on prison suicide is the relative absence of systematic research in this area. Salzberg (1976) listed only two studies in his review section, neither of which utilized standardized measures. Burtch and Ericson (1979) wrote a comprehensive annotated bibliography in which they listed

42 references to prison suicide, the majority of which were media, or government reports. They noted the poor (or absent) methodologies of the handful of existent studies, none of which employed psychometric strategies. The lack of adequate research in the area is reflected in the fact that at least one researcher has concluded that ethnicity is the single most powerful predictor of self-inflicted death in the American penal system (Johnson, 1976; Anson, 1983). Even this coarse predictor loses its power when the type of prison and geographic location are taken into account (Anson, 1983).

There appear to be only two studies which have systematically addressed psychological factors in prison suicidal behaviour. Both of these were derived from a three year study of self-mutilation and attempted suicide in New York state penal institutions (Toch, 1975; Johnson, 1976). A semistructured clinical interview was conducted with a sample of 175 non-suicidal inmates. Interview content was categorized and analyzed according to a typology of crisis themes which described the difficulties reported by the subject, his main concerns, and the focus of his despair (Toch, 1975). Both studies utilized randomly selected comparison groups for comparison on certain demographic variables and the distribution of crisis themes. An analysis of 17 background variables revealed that (aside from cultural background) only two

variables (offense of personal violence and grammar school education) were associated with suicidal risk, in both jails and prisons, in a consistent direction (Johnson, 1976). Six other variables were found to be related to self-injury in interaction with the type of confinement setting. Adolescent, single, non-addicted, and first-offense inmates are prone to crisis in prisons, whereas the opposite is true in jails. Toch (1975) and Johnson (1976) found that older inmates, addicts, married inmates, and those with prior experience of arrest and confinement had more serious adjustment problems in jails. Both studies found that black inmates were strikingly underrepresented in the crisis groups.

The following crisis themes had the highest incidences in the crisis sample: isolation panic, self-classification, self-certification, self-alienation, self-escape, self-preservation and self-intervention (Toch, 1975). Neither study attempted to predict or classify subjects on the basis of crisis themes, but such an attempt would have been fruitless as no themes were absent or present consistently in either group to a degree which would allow significant differentiation. Even in the comparison group, the vast majority of inmates reported incidents or occasions of serious stress (Toch, 1975). The prevalence of stress in the prison environment reported by Toch (1975) underscores the significance of

the problem of assessing suicidal risk in a prison setting.

The Toch (1975) and Johnson (1976) studies represent monumental contributions to the understanding of the phenomenology of prison breakdowns. However, they offer little information on how suicidal inmates differ from those who are not suicidal, nor do they reveal how such inmates might be identified prior to their breakdowns.

There appear to be only two studies that have attempted to compare suicidal and nonsuicidal inmates on standard psychological tests. This is somewhat surprising, in view of the fact that the Minnesota Multiphasic Personality Inventory (MMPI) is routinely administered in a variety of correctional settings. Carbonell, Megargee and Moorehead (1984) reviewed the literature on the prediction of individual adjustment to prison using structured personality tests. They identified 22 reports in the span from 1938 through 1981, of which only one study examined parasuicidal behaviour. That study, Panton (1962) compared 37 self-mutilators with 37 model prisoners and 37 rule violators with regards to scores on the MMPI. In comparisons of the group mean differences, self-mutilators were found to score significantly higher on four subscales; "F", Paranoia, Psychasthenia, and Schizophrenia. No attempts to predict

or classify subjects according to group membership were made.

The apparent lack of MMPI research on prison suicide may be due to that instrument's lack of utility in predicting suicide in the general population. Watson, Klett, Walters and Laughlin (1983) recently reviewed the MMPI/suicide literature, finding only eight studies which suggested a relationship between MMPI scores and suicide, none of which were conducted in prison settings. Watson et al, (1983) concluded that their own large cross validation study indicated that the MMPI does not appear to be a fruitful tool for the separation of suicide committers from non-committers as a whole.

Salzberg (1976) developed a criminal suicide attempt scale by comparing suicide attempt inmates with non-attempters on 33 behavioral and personal variables, including the Bipolar Psychological Inventory (BPI). The two groups were significantly different on 25 items of the BPI that related to family problems, sexual immaturity, dependence, depression, and self-degradation. Multiple regression techniques were used to classify subjects as attempters or non-attempters.

Using actual suicide attempt base rates, 90% of attempters were correctly classified, whereas 52% of non-attempters were incorrectly identified as attempters. In terms of efficiency, only 33.8% of subjects identified as

suicide attempters were correctly classified. The predictive accuracy of the developed scale was not impressive.

Despite the fact that prisons would seem to be a particularly ripe environment for studying suicidal behaviours, there have been no systematic attempts to examine how high-risk inmates differ from other inmates on specific psychological variables that have been reported to be related to suicidal behaviour. The present study appears to be unique in adopting such an approach.

It is tempting to concur with Burtch and Ericson's (1979) conclusion that the only denominator common to the men who suicide in custody is simply that history has remained silent on them:

> society (which) often views inmates' suffering -- even when this culminates in death -- with equanimity. We maintain that the lack of knowledge on inmate suicides has been intimately connected with the unwillingness of journalists, academics, and the general public to regard these suicides as noteworthy. (p.79)

However, this may represent an overstatement of the case. In assessing the paucity of research on prison suicides, one has to take into account the difficulties

associated with doing research on correctional populations, as well as the methodological problems in conducting research on suicide in general.

Conducting research in correctional settings is impossible without the full cooperation of both the staff and inmates. Toch (1975) suggests that attitudes which discount the seriousness of prison breakdowns are a product of prison myths which are shared by staff and inmates alike. One myth, that of the "Manly Man" proscribes feelings of despair, weakness and vulnerability (Toch, 1975). From this perspective, inmates who break down are expected to make light of their problems, or they risk being labelled, by other and themselves, as weak, unmanly, impotent or sick. Some security staff view research on inmates' problems as a waste of time, or as a form of extra attention that the inmates do not deserve. Research in prison must be conducted within the constraints of prison routines, and access to inmates is sometimes slow and inconsistent, particularly when staff reactions to the research (or the researcher) are negative.

From the inmate's perspective, self-disclosure can be self-incriminating. Toch's (1975) study was successful only because the researchers had no official ties with the institution and response confidentiality was assured. Inmates are less likely to be candid when the information

they give may be used in making administrative decisions about them. "Guilt by association" is commonplace in prisons, and some inmates are wary of being labelled as a "bug" (psychologically disturbed) by virtue of having participated in psychological research.

Despite these obstacles to participation, the responses of prisoners in general towards research tends to be highly positive (Repucci and Clingempeel, 1978), especially when the aims and motivation of the research are clearly explained to staff and inmates (Toch, 1975). The motivations of subjects have been questioned by Repucci and Clingempeel (1978), who correctly note that inmates often are eager to participate as a means of obtaining a respite from their boring, and at times harsh, environments. Under such situations, the issue of voluntary informed consent becomes an ethical consideration to the extent that participation is coerced by the desire to escape noxious surroundings. The seriousness of this issue is a function of the degree to which inmates are being exploited by the researcher. Where the procedures involve no risk to the subjects, and may be of some benefit, the issue becomes academic as long as standard ethical guidelines are observed.

A detailed discussion of methodological issues involving research with correctional populations may be found in Repucci and Clingempeel (1978). A discussion of

conceptual issues relevant to the study of suicide will be presented in the next section.

CONCEPTS ABOUT SUICIDE

Two competing models of suicidal behaviour have been developed: a single syndrome model, and a multiple syndrome model (Katschnig, Sint, and Fuchs-Robetin, 1979). In the single model approach, various behaviours are seen as manifestations of the same suicidal tendency, the wish to die. The wish to live can overcome the wish to die, leading to less severe harm. This model assumes that there is a continuity underlying different behaviours such that there are differences in quantity/intensity or degree of concepts such as suicidal intent. Katschnig et al (1979) state that if the single syndrome model is correct, we can adopt the public health model of primary, secondary, and tertiary prevention. An analogy would be with diabetes, in which it is possible to identify people in the early stages of the illness. Kreitman (1977) notes that American studies show a bias towards viewing suicidal threats, attempts and completed suicide as phenomena differing in degree rather than kind. For example, Worden (1976) states that all suicide acts fall on a continuum of lethality with attempters and completers being two distinct but overlapping groups. Thus it is possible to order different forms of suicidal behaviour on a dimension of lethality of

seriousness. Beck, Kovaks, and Weisman (1979) have discussed the development of a tripartite multiaxial classification of suicidal behaviours, that recognizes three categories: suicidal ideas, suicide attempts, and completed suicide. Beck et al (1979) stress the continuity of these behaviours along the underlying dimension of suicidal intent. The results of a large scale, sophisticated, psychological autopsy study by Brent et al (1988) suggest that suicide completers and suicidal inpatients are remarkably similar over a wide ranges of domains, including precipitants, psychiatric diagnoses, previous suicidal behaviour, family history of suicide, and psychiatric disorder. Brent et al (1979) concluded that there is a continuum between ideation, attempts and completion.

In the multiple syndrome approach, each form of suicidal behaviour is considered to be a phenomenon on its own, having its own cause, purpose and outcome. Treatments and management may be unique to each syndrome. The prevention of "attempted suicide" might be different from the prevention of "suicide" (Katschnig et al, 1979). Neuringer (1976A) suggests that the continuum approach views people who attempt suicide as "pale carbon copies" of those people who commit suicide, and that the method is logically and empirically unsound. Kreitman (1977) states that the term "suicide" is by no means free from ambiguity, and that the situation is far worse with the term "attempted

suicide". Originally, attempted suicide was seen as a simple failure to complete a suicidal act for whatever reason. According to Kreitman (1977), Stengel and Cook (1958) were the first to appreciate that attempted suicide may represent something different psychologically other than incomplete suicide. They stressed the social and communicational aspects of suicidal behaviour. Following the lead of Stengel (1964), a number of researchers have concluded that the two forms of suicidal behaviour are distinct and likely to have different etiologies. They are considered to represent separate but overlapping populations, with the attempt population being characterized as younger, using less lethal means, and having more women than men, with the sex difference being one of the most stable findings (Stengel, 1964; Freeman, Wilson, Thigpen and McGhee, 1976; Kreitman, 1977, Morgan, 1979). Freeman et al (1976) stated that clinicians need to reorient their conceptualizations of suicide, and that the term "suicide attempt" should be stricken from their vocabulary. Morgan (1979) states that the World Health Organization defined "suicidal act" as the self-infliction of injury with varying degrees of lethal intent and awareness of motive; "suicide" was defined as a suicidal act with fatal outcome. However, it is often difficult to decide whether a death was suicidal or accidental and unintentioned. Further, many non-fatal episodes do not appear to be related at the time

to conscious ideas of suicide, and it is difficult to assess motivation in any reliable and objective way (Morgan, 1979; Kreitman, 1977). Kreitman (1977) suggests that definitions which rely on conscious intent with motivation to kill oneself place a serious restraint on research. Aside from the problems in assessing motivation, individuals who wished to damage themselves, but not to die, would have to be excluded. Kreitman notes that this excludes the great majority of patients that clinicians are called upon to see, or whose behaviour social scientists may wish to explain. In fact, the majority of so-called "suicide attempters" (four-fifths) are attempting something other than death (Kreitman, 1977). For Freeman et al (1976), the vast majority of events are not suicide attempts; events of self-injury or self-poisoning represent attempts to live, rather than to die. Morgan (1979) estimates that about 10% of "attempters" reporting to hospital are, in fact, failed suicides, who continue to have strong suicidal wishes after physical recovery. Morgan (1979) prefers to use the term "non-fatal deliberate self-harm". Kreitman (1977) feels that this term still leads to ambiguity. For example, inferences may still be necessary to determine "deliberateness", and using the outcome of behaviours in a definition can lead to inconsistencies. For instance, in a pharmacologically naive individual, Vitamin tablets could be ingested with a high degree of intent, whereas alcohol

toxicity, which can be very harmful, would generally not be considered to be associated with suicidal intent. Kreitman (1977) notes that many patients who deliberately poisoned themselves have sometimes been given only slight attention from physicians because they were not judged to be "attempting suicide". Kreitman (1986) suggests that to regard patients with non-fatal outcomes as "failed suicides" would gravely fail to meet clinical requirements. For this reason, he developed the term "parasuicide" (Kreitman, 1977). He wanted to supply a term that would indicate a behavioural analogue of suicide, but without considering a psychological orientation towards death being in any way essential to the definition. He felt that to omit all lexical reference to suicide (i.e. "deliberate self-injury") would ignore the very real association that exists between self-poisoning, for example, and completed suicide at a later date. Thus, he defined parasuicide as: a non-fatal act in which an individual deliberately self-injures or ingests a substance in excess of any prescribed or therapeutic dosage (Kreitman, 1977: P.3).

Kreitman (1977) believes that parasuicide is a phenomenon worthy of clinical attention in its own right. Morgan (1979) notes that, apart from the heavy load it places upon hospital resources, it leaves considerable damage in its wake, both physical and psychological.

Kreitman (1977) states that parasuicide has been amply demonstrated to be a distress behaviour, and that, as one of the least constructive ways of resolving problems, repetition is worth preventing. He also feels that the prevention and understanding of long term distress seems as important as the prevention and understanding of eventual death by suicide. Further, psychiatric screening of all such patients can be justified on clinical grounds alone (Kreitman, 1977).

The term parasuicide has found acceptance by a number of researchers and clinicians (Henderson et al, 1977; Clum, Patsiokas, and Luscomb, 1979; Pierce, 1981; Kreitman, 1986).

The dichotomization of suicidal behaviour has led to a focus on completed suicide in prospective prediction studies. The results of such research have been unimpressive, and generally a higher rate of prediction accuracy has been obtained simply by predicting that nobody would commit suicide, (Pokorny, 1983; Murphy, 1984).

In the most sophisticated prospective study to date, Porkorny (1983) followed 4,800 patients consecutively admitted to in-patient psychiatric services in a Veterans Administration Hospital, over a period of four to six years. Data was collected on a wide range of measures (153) previously reported as predictive of suicide. During follow up, 67 suicides were identified from the total sample, equivalent to a rate of 274 per 100,000 per year.

Using actual base rates, discriminant function analyses classified over one quarter of the subjects as suicidal, yet still only predicted just over one half of the actual suicides. Disregarding the base rate allowed suicide completers to be identified fairly well, but at the cost of too many false positives (Pokorny, 1983). An excess of false positives was also found in the two-year prospective study of 1,263 attempted suicides followed up by Pallis, Gibbons, and Pierce (1984). The high rate of false positives is a function of the low base rate problem, combined with the fact that significant forces in society are doing their best to prevent suicide fatality (Pokorny, 1983; Murphy, 1983, 1984).

Prospective studies such as Pokorny (1983) have implications for the multiple syndrome model of suicide. Pokorny (1983) found that suicide completers and attempters could not be as easily distinguished as the literature suggests. He found the two groups to be similar in most respects; they were mostly related to the same predictors, and generally in the same direction. The only items which related differently were: a prior diagnosis of personality disorder in suicide attempters, with such traits as manipulativeness and hostility, along with projection of blame and drug dependency. Thus, for the most part the two behaviours involved similar subjects, although the suicide attempters did show more personality disorder-related

traits. In an eight year follow up study of 1,959 British parasuicides, Hawton and Fagg (1988) found no age differences for males who suicided versus survivors, and no differences in marital status, employment status or living alone. There was also no difference in the dangerousness of the index attempts, and depression was not a distinguishing factor overall. However, behavioural retardation and insomnia, as well as relationship difficulties, were distinguishing factors. Fawcett, Scheftner, Clark, Hedeker, Gibbons and Coryell (1987) reported a four year prospective study of 954 patients with major affective disorder. Diagnostic categories, level of suicidal ideation, and the medical severity of past suicide attempts did not differentiate the completed suicide group. The only differences found were hopelessness, loss of pleasure, and mood cycling during the index episode.

Arguing against the multiple syndrome model, Dyer and Kreitman (1984) have commented on the substantial links between suicide and parasuicide, noting the observation that suicides with a history of parasuicide share many of the characteristics of parasuicides who do not commit suicide. Stengel (1964) has noted that his formulations concerning the two separate, but overlapping, populations have given rise to serious misunderstandings. A major misconception is that the two populations were meant to consist of altogether different and mutually exclusive types of individuals,

whereas, actually, there is a high degree of overlap. Stengel (1964) uses the analogy of tuberculosis, in which there are two distinct populations: those who get better versus those who do not recover. The two separate populations still suffer from the same disorder.

A number of researchers have advocated the abandonment of the concept of suicide as a mediational process, which views it as a disorder rather than as a symptom (Neuringer, 1976A). On the basis of his review of the literature, Shaffer (1982) did not find evidence that suicide represents a distinct diagnostic group with characteristic dynamics or other antecedents. He suggested that suicidal behaviour may be merely an epiphenomenon of a variety of mental states, each with its own different factors and prognoses. Shaffer (1982) claims that the research evidence supports the view that suicidal individuals differ from others only in their propensity to repeat the suicidal behaviour. Pattison and Kahan (1983) concur with the DSM III perspective that suicidal events should be treated as symptoms, and not a discrete mental disorder. However, they believe that deliberate self-injury meets all the criteria to be considered as a clinically significant syndrome along Axis I. From a behavioural viewpoint, Jeger (1979) believes that similar environmental consequences shape and maintain all forms of self-destructive behaviour.

There is nothing in the recent literature to

invalidate Kreitman's (1977) statement that there is "no immediate prospect of theories both powerful enough to elicit widespread assent and applicable to every day clinical and research problems" (p.41). Theoretical ambiguity and the inefficiency of statistical prediction place clinicians and researchers at a disadvantage. Pokorny (1983) suggests recognizing the limitations of suicide research and focusing on that which can be feasibly done. Pokorny (1983) and Murphy (1984) have pointed out that clinical decisions are not made by statistical prediction, but rather they consist of little steps, taken one or a few at a time, according to the individual case. Cull and Gill (1982), Murphy (1983), and Pallis, Gibbons, and Pierce (1984) have argued that it is important to recognize the degree to which a client resembles other individuals who have attempted, or completed suicide. When similarity is based on the presence of clinical signs or symptoms, or evidence of psychological conflict or distress, the similarity is meaningful to a clinician, and can serve to focus clinical attention in such a way as to prevent the similarity from extending to a completed suicide or parasuicide. From a clinical standpoint, rather than predicting an event, it may be more useful to provide clinicians with a numeric estimate of the probability of a person belonging to a suicide criteron group (Pokorny, 1983). The "risk by similarity" approach requires the

delineation of recognizable high risk groups (Murphy, 1983; Pallis et al, 1984). Kreitman (1977) and Farmer (1979B), among others, have pointed out the need to identify groups of individuals, as opposed to groups of episodes or symptoms. Of all clinically defined patient groups, parasuicides carry the highest risk for subsequent suicide; this finding has been demonstrated epidemiologically, and is independent of specific diagnoses (Kreitman, 1986).

The risk is 1% to 2% per annum and rises to upwards of 10% over follow up periods of eight to ten years (Kreitman, 1977; Hawton, 1987). There appears to be a process of desensitization (Morgan, 1979), and roughly 50% of suicides and parasuicides have a history of more than one episode of self-destructive behaviour (Kreitman, 1977; Morgan, 1979).

Despite its reliable predictor status (Kreitman, 1977; Pokorny, 1983), parasuicide appears to be poorly understood by clinicians and researchers (Freeman et al, 1976). It is clear that dichotomization of suicidal behaviours into fatal and non-fatal categories will not be sufficient.

Kreitman (1977) has stated the need to divide parasuicides into more homogeneous subgroups for four purposes: the prediction of further parasuicide; the prediction of suicide; clinical utility (treatment or management implications); and for purposes of research and theory. Clinically, it has been evident to a number of authors that parasuicides are heterogeneous, spanning a

range of severity of attempt, apparent motivation, previous history, and other phenomena, which may carry different requirements for treatment, after care, and prevention (Henderson et al, 1977; Paykel and Rassaby, 1978; Morgan, 1979).

Parasuicide Typologies

Henderson et al (1977) note that clinicians may adopt an implicit typology of parasuicide, such as stereotypes of the personality-disordered, the young repeater, the manipulative overdose patient, the wrist cutter, or the more life-threatening act of the older male.

There have been a number of suggested classifications of suicidal behaviours, usually involving three groups or types. For Stengel (1964) there are suicidal gestures, in which the communicative and manipulative purpose of the act is prominent, and self-destructive intent is apparently absent. There are ambivalent attempts in which the person was aware of his indecision and apparently could not make up his mind whether he wanted to live or die; and there are determined deliberate suicidal attempts which are intended, and could be expected, to be fatal by both the attemptor and others.

Freeman et al (1976) described four populations: persons who have only talked about it; those who engage in non-lethal self-injuries or self-poisonings; those who are

nearly saved following self-injury, but die after rescue and medical intervention; and those who die immediately.

Simpson (1976) describes three categories of self-inflicted injuries: suicidal attempts of a determined and violent kind; self-mutilation deliberately carried out for conscious gain; and self-mutilation without conscious motive.

Dingman and McGlashan (1988) identified three classes of suicidal behaviours: self-mutilations that were not life-threatening; manipulative suicide threats or efforts; serious suicide threats or attempts.

Pattison and Kahan(1983) reviewed the literature on deliberate self-harm behaviour in which there is no apparent intent to die. Behaviours included skin carving, wrist cutting, biting, burning, eye enucleation, amputation of tongue or ear, skin ulceration, and genital mutilation. They state that these behaviours should be construed as a separate diagnostic syndrome, which begins in late adolescence, has a low level of lethality, and continues over many years, with repetitive episodes. It is suggested that persons with the syndrome have a higher probability of suicide after many years of deliberate self-harm behaviour, which represents a continuing disorder (Morgan, 1979; Pattison and Kahan,1983).

Alternative classifications of parasuicide have been along the dimensions of seriousness and repetitiveness

(Paykel and Rassaby, 1978). Different notions about the "seriousness" of behaviours have sometimes resulted in confusion. There have been attempts to infer the motivations for self-destructive acts on the basis of the method or the lethality of the behaviour (Freeman et al, 1976; Worden, 1976). The concept of lethality has never been defined adequately, but generally involves notions of the reversibility of the method of injury and the potential for intervention or rescue (Freeman et al, 1976; Worden, 1976). Despite an association between lethality and suicidal intent, or the wish to die, Kreitman (1977) and Morgan (1979) state that the medical seriousness of the act is not related to subsequent suicidal behaviour, whether parasuicide or completed suicide. The dangerousness or medical severity of past behaviour has not had predictive utility in prospective studies of suicide completion (Fawcett et al, 1987; Hawton and Fagg, 1988). Even non-lethal attention-seeking or self-mutilatory behaviours have been shown to be associated with higher suicide risk (Morgan, 1979; Pattison and Kahan, 1983; Robins and Alessi, 1985). As Kreitman (1986) states, the correlation between the degree of physical damage and suicidal intent in parasuicide is too low to be of much use in a practical context.

Repetitiveness has received considerable attention. Shaffer (1982), in fact, concluded that the propensity to

repetition is the only thing distinguishing suicidal individuals from others. Farmer (1979B) stated that, in many ways, self-poisoners do not differ from the general population, but people who have more than one episode do. Bancroft and Marsack (1977) identified three patterns of repetition. There is a chronic pattern, reflecting an habitual method of dealing with life's difficulties. This category has the highest number of previous episodes, and accounts for two-thirds of subsequent repetition. A second pattern involves the clustering of two or more episodes occurring within a few months during prolonged stress, followed by avoidance for long periods. The third pattern involves a single episode during a time of crisis, after which repetition is rare.

Morgan (1979) suggests a 25% rate of repetition within one year for males. Kreitman (1977) found an overall rate of 16%. In a two year follow up study of 211 parasuicides, Bagley and Greer (1976) found a 26% repetition rate, with 2% suicides. They were able to correctly classify 81% of the repeaters on the basis of five variables: antisocial personality, organic brain disorder, a previous history, widowed/separated/divorced, and low social class. The best overall predictor was antisocial personality. However, they did not report any false positive data; nor was their scale cross-validated.

Kreitman (1977) developed a six-point scale from a

1968 cohort sample of 847 hospitalized parasuicides. He validated the scale on a 1970 cohort sample. There was repetition in only 5% of the sample who scored zero on the scale, whereas those scoring above five had a 48% repetition rate. The six indices were: sociopathy, previous psychiatric treatment (in-patient and out-patient), previous parasuicide, alcohol problems, and not living with a relative. Interestingly, history of parasuicide was predictive regardless of whether there had been hospitalization. Kreitman (1977) also found that a history of criminal behaviour significantly discriminated the groups at the .05 level.

Morgan (1979) studied a group of 215 parasuicides, with 56 repeaters, and 159 non-repeaters. The three most significant discriminating factors were: previous psychiatric treatment, previous self-harm history, and criminal record (.001 level). After cross-validation, he found that 77% of the repeaters had a score of 2 or 3, whereas only 32% of non-repeaters scored 2 or 3 on the scale. Morgan (1979) also found less significant associations between repetition and personality disorders, alcohol or drug abuse, low social class, early maternal separation, and regrets about surviving.

Personality Factors and Parasuicide

Kreitman (1977) states that there is broad agreement

on the psychiatric characteristics which distinguish repeaters from non-repeaters. They are most commonly described as personality disorders who try to resolve their problems by excessive use of alcohol and drugs, who have already experienced psychiatric attention, and in whose lives parasuicide is a recurrent theme. He lists the constant characteristics as follows: previous psychiatric treatment, previous history of parasuicide, sociopathy, alcohol/drug problems, unemployment, criminal record, and low social class. He also points out that, among the young, there may be more similarities between repeaters and completed suicides.

In an eight year sample of parasuicides in Edinburg, the following trends were noted: 37% were diagnosed with a mental illness, including 28% for depression; 53% were considered to have a personality disorder; 48% had problems with alcohol; 23% had problems with drug abuse; 48.4% had a criminal record. Personality disorder and problems with alcohol/drugs were especially common in the 15 - 34 age group (Kreitman, 1977). In a separate study, Morgan (1979) found a 12% incidence of major functional psychotic mental illness, usually depressive; a 39% incidence of reactive depression; a 42% incidence among males of personality disorder; and a 25% incidence of alcohol problems.

Pallis and Birtchnell (1977) have noted that personality disorders are common among those who attempt

suicide, and Kreitman (1986) notes that among suicides a diagnosis of personality disorder is quite common, in association with alcohol or substance abuse. Neuringer (1976A) has stated that suicide is the only "personality" disorder that is lethal. Morgan (1979) reports that the personality disordered antisocial subgroup of parasuicides contributes a considerable number of individuals to the ranks of suicides, and their suicide risk should not be minimized. Kreitman (1986) suggests that personality disorders with a propensity for transient intense mood swings are at extra risk, even if there is little depression on the day of examination. Borderline personality disorder is strongly associated with a history of suicide attempts, and has a higher incidence than other diagnostic groups (Friedman et al, 1983). Dingman and McGlashan (1988) found a higher rate of suicide in borderlines than in the general population, and Fyer et al (1988) noted that borderlines with concurrent affective and substance use disorders had a higher rate of serious suicide attempts than other patients. They also found an eventual suicide rate of 9.5% among borderlines, and noted that 75% had a history of previous attempts.

Neuringer (1976A) states that suicide research cannot be separated from the nexus of personality/environment interaction. There have been a number of suggestions of a

common etiological factor in suicidal behaviour that is situated in the personality. Kreitman (1986) presumes that an episode "serves to mark an individual in whom there are few inhibitions against self-aggression, and hence is liable to act on any suicidal impulses that might subsequently occur. Morgan (1979) speaks of a "predisposing psychological vulnerability which contributes to the way in which the individual reacts to the situation" (p.36). Solomon and Arnon (1979) propose a distortion of personality development that is a common etiology of suicide and substance abuse. Levenson (1976) and Neuringer (1976) speak of an enduring cognitive organization of style which diminishes problem-solving ability and the capacity to cope with the stresses of life. Fyer et al (1988) feel that the propensity for suicidal behaviour may be determined by the personality structure alone while the level of seriousness is related to comorbidity with affective and substance use disorders.

Psychological Studies of Parasuicide

Kreitman (1977), having noted the paucity of psychological test data in the area, stated that no core suicidal personality has been found. Several reviews of the literature on standard psychological tests (MMPI, TAT, Rorschach) have shown that these tests cannot reliably differentiate suicidal from non-suicidal individuals (Brown

and Sheran, 1972; Lester, 1974; Neuringer, 1976B; Kreitman, 1977; Farberow, 1982). The Kreitman (1977) study is noteworthy because he validated his findings in two groups of parasuicides and compared them with a medical/surgical control group, plus he conducted a follow up study at five weeks on one of the parasuicide groups. Measures included the Sixteen Personality Factor Questionnaire (16 PF), Neuroticism Scale Questionnaire (NSQ), the Symptom Sign Inventory (SSI), and the Hostility and Direction of Hostility Questionnaire (HDHQ). He concluded that roughly 50% of any group of parasuicides will produce psychiatric symptomatology indicative of character disorder. The follow up data suggested that at times of crisis, character disordered individuals over-react with desperate, manipulative behaviour and intense self-pity. Parasuicides had higher levels of both extra- and intropunitive hostility, especially among the character disordered. They differed from normals on almost all of the 16 PF scales, especially on factors contributing to second-order anxiety. Kreitman (1977) suggested that there were three main salient features in the results. In parasuicides, there is a high incidence of psychiatric symptomatology associated with personality disorder rather than mental illness. Emotional upset, measured by anxiety and hostility, is the main characteristic on which parasuicides differ from normals. Parasuicides have great difficulty in creating and

maintaining good interpersonal relationships, and their life situations are so disorganized that it is inevitable that new stress are added to old.

Pallis and Birtchnell (1976) compared suicide attempters with non-suicidal individuals on thirteen MMPI scales, finding significant differences on twelve scales. There were significant differences on: Depression, Psychopathic Deviate, Masculinity, Femininity, Dependency, Ego-Strength, Neuroticism, Extraversion, Hostility, Social Desirability, Index of Psychopathology, Anxiety and Unconventionality. Pallis and Birtchnell (1977) reanalyzed their sample, dividing their subjects into three groups: non-suicidal, non-serious attempters, and serious attempters. Interestingly, the non-serious attempters constituted the most deviant group. There were no significant differences between the serious attempters and the non-suicidal individuals. The non-serious attempters differed from each of the other two groups on the Dependency, Hostility, and Unconventionality scales. For male non-serious attempters, the most deviant scales were Dependency, Hostility, and Social Desirability. A composite picture of the non-serious attempters can be derived from examining the three scales on which this group was most clearly different from the other two groups. The Dependency scale suggests undue reliance on others, lack of self-confidence, inability to cope, helplessness,

vulnerability to stress, and inclination to worry. High scores on the Hostility scale suggest little confidence in fellow men; seeing others as dishonest, unsocial, immoral, ugly, and mean; believing that others should be made to suffer for their sins. The Unconventionality scale seems to reflect a cynical viewpoint in regard to people. Believing that people dislike putting themselves out for others, that people are honest through fear of being caught, and that they would lie to keep out of trouble, are attitudes which contribute to a high score. It is worth noting that a number of the characteristics that characterize the Pallis and Birtchnell (1977) non-serious attemptor group would seem to be descriptive of the borderline and antisocial personality disorders.

Levenson (1976), Neuringer (1976B), and Clum, Patsiokas and Luscomb (1979) have summarized the cognitive research, and concluded that there may be a core cognitive organization or style that is common to suicides and parasuicides, involving cognitive rigidity, mental inflexibility, and poor problem-solving ability. Levenson (1976) suggests that suicidal individuals have a view of the world which is highly undifferentiated, inarticulate, and global. Neuringer (1976B) interprets the research as indicating the essential stability of these cognitive characteristics in suicidal individuals over time, which suggests the possibility of an enduring predisposition or a

general response tendency to use suicidal behaviour as a coping strategy.

Parasuicide Clusters

The available literature does not provide a clear choice between the continuum and the multiple syndrome models of suicide. Recently, cluster analytic techniques have shown some promise in delineating homogeneous sub-groups of parasuicides (Kiev, 1976; Henderson et al, 1977; Paykel and Rassaby, 1978; Katschnig, Sint, and Fuchs-Robetin, 1979; Kurz et al, 1987).

Katschnig et al (1979) were the first to present follow up results showing that a homogeneous cluster representing "failed suicides" had a higher transition probability of suicide than other homogeneous clusters. More recently, Kurz et al (1987) reported one-year follow up results for three homogeneous clusters of 485 parasuicides. Cluster A (11% of the subjects) showed the well-known features of repeaters, with low mean age, higher levels of hostility, more recent ideation, and a high frequency of personality disorders. Cluster B (41% of the sample) had above average mean age, took more precautions, were more likely to have been severely intoxicated, had high levels of intent to die and depression, had low hostility, and more serious acts. Cluster C (48% of the sample) had fewer previous episodes, low age, low recent ideation, low

concealment, low intoxication, high interpersonal conflict, low intent to die, and more cases of reactive depression.

In Cluster A, 25% repeated parasuicide, and 4% suicided. In Cluster B, 9% repeated, and 4% suicided. In Cluster C, 9% repeated, and only .4% suicided. Kurz et al (1987) observed that their cluster groupings were compatible with previous cluster analyses (Henderson et al, 1977; Paykel and Raffaby, 1978; Katschnig and Fuchs-Robetin, 1984). There seems to be a consistent finding of three main groups: non-serious, serious, and repeaters. Kurz et al (1987) suggest that this typology is consonant with clinical experience, and represents an objective property of the complex phenomenon of suicidal behaviour, as opposed to intuitive judgement. They propose that "by allocating a patient to a particular behavioural pattern, the level of probability of future suicidal acts is determined, and therapeutic measures can be taken accordingly" (p.524). Their data provide support for the "risk by similarity" approach to assessment described by Cull and Gill (1982), Murphy (1983), and Pallis, Gibbons, and Pierce (1984).

There can be methodological problems in the interpretation of cluster analyses (Borgen and Weiss, 1971; Blashfield, 1980). Cluster membership is obviously a function of the variables included in the analysis. However, the results, to date, support the validity of a

three cluster model, as well as the prognostic significance of repetition and seriousness of suicidal intent. As Kurz et al (1987) note, a pattern of repetition has long been associated with increased risk (Bagley and Greer, 1976; Kreitman, 1977; Morgan, 1979).

Self-Reports of Suicide Intent

Suicidal intent, or the wish to die, is considered to be a psychological phenomenon, subject to exploration and measurement, which is an important component in formulating suicide risk (Beck, Kovacs and Weisman, 1979). There have been some concerns about using professed or inferred intention as a criterion (Stengel, 1964), because of possible denial and the subjectivity of external inferences. However, a number of studies have defined groups based on statements of whether the act was carried out in order to kill themselves (Dyer and Kreitman, 1984). Worden (1976) and Robins and Alessi (1985) have found high associations between expressed seriousness of intent and lethality of behaviour. Robins and Alessi (1985) found that statements about depressed mood and suicidal intent correlated highly with actual behaviour, and they concluded that adolescents can be reliable reporters of their suicide potential.

In a prospective study of parasuicide repeaters, Gispert, Davis, Marsh and Wheeler (1987) found few overall

differences between repeaters on demographic variables and such factors as seriousness of method or possiblity for intervention. However, self-ratings of the wish to die were predictive. Gispert et al (1987) concluded that what subjects report themselves about their unhappiness, anger and suicide intentions may be more predictive than more easily measured specifics about environment or suicidal behaviour.

Worden (1976) found that patients were able to number and identify their suicide attempts, and distinguish them from other forms of self-destructive behaviour with different motivations. At times, the non-suicidal behaviour had been deemed suicidal by clinicians, but the patient did not agree.

The literature suggests that a history of parasuicide is a marker of considerable statistical and clinical importance. While the repetitiveness of such behaviour is of well-known importance, there also appears to be utility in classifying parasuicide on the dimension of suicidal intent, even when self-reported.

PRIMARY GOALS OF THE STUDY

If suicide screening admission procedures are to be developed for correctional settings (Smialek and Spitz, 1978; Denoon, 1983; Boyarski et al, 1988), it seems important to determine the degree to which inmates can be

classified on the basis of their previous histories of parasuicide. Murphy (1983), Pallis, Gibbons and Pierce (1984), and Kurz et al (1987) have suggested ways in which categorizing previous parasuicide might be useful prognostically. The distinctions made in the general population may be blurred in a prison sample as a result of factors that are associated with both criminality and suicidal behaviour (e.g. personality and background factors).

There seems to be support in the general literature for viewing suicide attempts as either serious or non-serious. The serious group is definitely associated with a wish to die, while the non-serious group is more likely characterized as ambivalent, or as having other motivations (Stengel, 1964; Freeman et al, 1976; Kreitman, 1977; Morgan, 1979). Within the group of parasuicides in which the wish to die is not significant, there is a group whose behaviour is described as being highly operant or manipulative, or else whose self-injury seems to be divorced from conscious motivations (Simpson, 1976; Pattison and Kahan, 1983). This group is clinically familiar in the prison setting (Correctional Services Canada, 1981; Denoon, 1983), and their risk for suicide is often downplayed, although perhaps inaccurately (Pattison and Kahan, 1983; Robins and Alessi, 1985).

The goal of the present study is to use self-report

measures to identify and classify prison inmates according to three proposed types of previous parasuicidal behaviours: Serious, Non-serious, and Self-mutilators. The main dimension of interest will be suicidal intent, or the expressed wish to die. Of prime interest is the degree to which these groups can be distinguished from one another, and from non-parasuicidal inmates, on the basis of a variety of psychological, social and background measures shown to be related to suicide risk. Discrimant function analytic procedures will be used to assess the degree of classification and group separation.

To remain consistent with a body of research that has debated the validity of using self-report measures in assessing suicide risk, the Suicidal Behaviours Questionnaire (Linehan and Nielsen, 1981, 1983; Strosahl, Linehan and Chiles, 1984) will be utilized for group construction. Issues relating to social desirability effects and construct validity (Strosahl, Linehan and Chiles, 1984) will be investigated in a secondary study (Study II).

METHOD

The research was conducted in the Lower Mainland Regional Correctional Centre (L.M.R.C.C.), the major provincial gaol for British Columbia (B.C.). The institution houses inmates on remand, inmates awaiting

transfer to other institutions, and inmates serving sentences less than two years in length. The Corrections Branch of the Ministry of the Attorney general for B.C. recently completed a study of suicides in the provincial system for the years 1970-1980 (Denoon, 1983). For that ten year period, there were 35 completed suicides in the system, of which 24 (68.5%) occurred at L.M.R.C.C., which is located in the most populous region of the province.

Subjects

The research sample consisted of 128 volunteer subjects, solicited from consecutive referrals to psychological services at L.M.R.C.C.. Subjects were asked to participate in a research study on psychological stress in prison. The ethical considerations relating to informed consent were observed. Subjects were informed that participation was purely voluntary, and that information was to be anonymous and confidential. Inmates were free to discontinue participating at any time, and they were offered access to a summary report on the study upon its completion.

Roughly one-third of the initial pool of referrals were not included in the study. For the majority of these inmates, attempts to schedule them were unsuccessful due to transfers, releases, or conflicts with prison routines, family visits, and court procedures. A small number (12) refused to participate, generally citing confidentiality

issues. No data were accessible which would allow a determination of how non-participating referrals differed from the research sample on relevant variables. The research project did not have approved access to inmate files.

Four subjects consented to be interviewed but were excused from the study when it became apparent that their mental statuses precluded participation in the lengthy procedures. Complete data was obtained for 114 subjects, with 14 other subjects having some portion of the data missing. Nine of the fourteen subjects failed to complete the last questionnaire, a lengthy (90-item) survey of attitudes toward the institution, either because of fatigue, or because prison routines required their presence elsewhere.

The mean age of the sample of 27.25 years (s.d.=8.00). The ethnic composition was primarily Caucasian (87%, n=111), with 6% Native Indian (n=7), 4% Black (n=5), and 4% other races or race not specified (n=5).

An attempt was made to classify subjects' current charges as either property-related or person-related. Person-related charges were construed as being more violent, such as weapons offenses, robbery, assault, rape, manslaughter, and murder. Fifty-two percent of the subjects fell into this category (n=66). The property-related category included offenses such as shoplifting,

fraud, burglary, theft, prostitution, drug charges, impaired driving, "status offenses" such as parole violations, as well as other minor offenses, such as trespassing and public mischief. Forty-eight percent (n=62) of the subjects were in this category. Subjects were also classified according to their criminal histories, with 66% (n=34) having a history of person-related offenses, and 34% (n=44) having a self-reported record of only property-related offenses.

The majority of subjects were either on "remand" (awaiting trial or sentencing), or were serving a term of less than two years: 21% were on remand (n=26), 12% had been sentenced to less than 6 months (n=15), 40% were serving one to two years (n=49), and 5% were in the process of serving longer sentences (n=6).

The majority of subjects had not completed high school: 22% (n=28) had completed grade 8 or less; 49% (n=63) had completed grades 9, 10, or 11; 19% had completed grade 12 (n=24); and 10% (n=12) had taken some courses at the college level.

Procedure

Subjects' names were obtained from consecutive referrals to psychological staff at the L.M.R.C.C. institution. Requests to meet with inmates were passed on through security staff. Subjects who were successfully

contacted were interviewed by the principal researcher, or by a graduate research assistant. Interviews were conducted individually in small cubicles used for private visits, or in unoccupied sections of the prison. Subjects were asked to participate in a research study on psychological stress in prisons. The focus on suicidal behaviour was not emphasized. They were assured of anonymity and confidentiality, and were asked to sign a form indicating their informal consent.

The first part of the protocol consisted of a semi-structured interview format, during which demographic and historical data were collected. Subjects completed the remainder of the research measures in the following order: Hopelessness Scale, Crowne-Marlowe SD scale, Edwards SD scale, Suicide Probability Scale, Beck Depression Inventory, Suicide Behaviour Questionnaire, Reasons for Living Inventory, Carlson Psychological Survey, Automatic Thoughts Questionnaire, Correctional Institutions Environment Scale. Upon completion of the session, subjects were asked if they had any questions and debriefed.

Instruments

A semi-structured interview was conducted with all subjects. The interview protocol was a modified version of the one used in the National Study of Women's Correctional

Programs (Glick and Neto, 1977). It includes basic demographic and personal data, along with information on criminal history, prison experience, family background, and employment history.

Hopelessness Scale (HS)

The Hopelessness Scale (Beck, Weissman, Lester and Trexler, 1974) is a 20 item true or false scale intended to measure negative expectations of the future which are related to suicidal behaviour or intent. Internal consistency has been reported to be .903 in a sample of 294 suicide attempters, with a correlation of .63 with independent clinical assessments of hopelessness (Beck et al., 1974). Minkoff, Bergman, Beck and Beck (1973) found that the statistical relationship between suicidal intent and depression is greatly diminished when scores on the HS are controlled. The HS has been reported to discriminate between different levels of suicidal stress (Beck, Kovacs, and Weissman, 1975).

Social Desirability Scales

The Crowne-Marlowe Social desirability scale (Crowne and Marlowe, 1960) and the Edwards Social Desirability scale (Edwards, 1970) are frequently used to estimate individuals' tendencies to respond to questionnaire items in a socially desirable fashion. The Crowne-Marlowe scale

consists of 33 true or false items, while the Edwards consists of 39 true or false items. Crino, and Svoboda, Rubenfeld and White (1983) reported test-retest reliability coefficients of .86 (Crown-Marlowe) and .77 (Edwards), and internal consistency alpha coefficients ranging from .70 to .77 for the Crowne-Marlowe, and .73 to .80 for the Edwards (EDSD).

The Edwards scale was derived from MMPI items and is highly negatively loaded on the "first factor of the MMPI", which is thought to reflect general maladjustment (Edwards, 1957; Nevid, 1983). Crowne and Marlowe (1960) considered the Edwards scale to be confounded with psychopathological content and developed their scale to avoid such contamination. Crino et al (1983) reported that the two scales are relatively independent factorially and share little common variance.

Suicide Probability Scale (SPS)

This is a brief, 36 item self-report measure designed to aid in the assessment of suicidal risk in adolescents and adults. Individuals rate the frequency of their subjective experience and past behaviors on a 4-point Likert scale. Suicide risk is reflected in three summary scores: a total weighted score, a normalized T-score, and a suicide probability score. There are four clinical subscales: Hopelessness, Suicidal Ideation, Negative Self-

Evaluation, and Hostility.

Cull and Gill (1981) report high levels of internal consistency for the SPS (alpha=.93), as well as high split-half reliability (.93). Test-retest reliability was also high (.94). Cull and Gill (1981) report that the SPS demonstrates good content and concurrent validity. Individual items, the clinical subscales, and the total weighted score were all able to significantly distinguish suicidal individuals from psychiatric inpatients and normal controls. Classification studies showed a moderately high degree of classification accuracy on derivation samples and upon cross-validation. Overall correct classification percentages ranged from 84.0% to 88.8%. Factor structure studies and comparisons to MMPI scores suggest that the SPS has good construct validity (Cull and Gill, 981).

Beck Depression Inventory (BDI)

The Beck Depression Inventory (Beck, 1967) is a 21-item self-report measure of depression. Each item is presented in a group of four statements graded in increasing severity. Items are weighted from 0 to 3, with a possible total score of 63. Scores from 10 to 15 are rated mildly depressed, 16 to 23 is considered moderate depression, and 24 to 63 is considered severe depression. The BDI items reflect the cognitive, affective, and vegetative components of depression. Beck (1972) provides

details of the repeated confirmations of the reliability and validity of the BDI, including high correlations (.79) with independent psychiatric ratings of depression in clinical samples.

Reasons for Living Inventory (RFL)

The Reasons for Living Inventory asks subjects to rate 48 items on a 6-point scale as to their importance as reasons for not committing suicide (Linehan, Goodstein, Nielsen and Chiles, 1983).

The RFL Inventory was developed within a cognitive-behavioral theoretical perspective to test the hypothesis that nonsuicidal individuals hold a set of positive beliefs and expectancies that suicidal individuals do not. Scale scores for six categories of beliefs can be obtained: Survival and coping beliefs; Responsibility to the family; Child-related concerns: Fear of suicide; Fear of social-disapproval; Moral objections. The scales have moderately high internal reliability, with Cronbach Alpha scores ranging from .72 to .89. Linehan et al (1983) found that the RFL was able to differentiate suicidal from nonsuicidal individuals in both general and clinical samples.

Suicidal Behaviours Questionnaire (SBQ)

The SBQ was developed by Linehan (1981), and has been used in a number of studies on suicidal behaviours (Linehan

and Nielsen, 1981,1983; Linehan, Goodstein, Nielsen and Chiles, 1983; Strosahl, Linehan and Chiles, 1984). The questionnaire includes items on the types and frequencies of suicidal behaviours previously engaged in, as well as estimates of the future likelihood of suicide (self-reported), using 5-point scales, as adapted for the present study. One derived variable, constructed for use in the present study, included self-estimates of ability to cope with the current life situation if it remained the same, and if it were to get worse (Copeworse).

There are several items on the SBQ that have been used to establish criteria relating to the seriousness and frequency of suicidal behaviours. The first item asks: "HAVE YOU EVER THOUGHT ABOUT OR ATTEMPTED KILLING YOURSELF?". Subjects select one of the following responses:

0 - No

1 - It was just a passing thought.

2 - I briefly considered it, but not seriously.

3 - I thought about it and was somewhat serious.

4 - I had a plan for killing myself which I thought would work, and seriously considered it.

5 - I attempted to kill myself, but do not think I really meant to die.

6 - I attempted to kill myself, and think I really hoped to die.

A second item asks: "HOW MANY TIMES HAVE YOU ATTEMPTED SUICIDE, THAT IS, INTENTIONALLY HARMED OR INJURED YOURSELF IN A MANNER WHICH AT THE TIME YOU OR SOMEONE ELSE CONSIDERED TO BE A SUICIDE ATTEMPT?"

A third item asks: "HOW MANY TIMES HAVE YOU INTENTIONALLY HARMED OR INJURED YOURSELF IN A MANNER WHICH AT THE TIME WAS NOT CONSIDERED BY YOU OR ANYONE ELSE AS A SUICIDE ATTEMPT?"

For the latter two items, frequencies for different time intervals can be reported: today, past several days, past 4 weeks, past year, total lifetime.

Carlson Psychological Survey (CPS)

The CPS was designed primarily for subjects accused or convicted of crimes (Carlson, 1982). The test consists of 50 items divided into 5 scales, or content areas:

1.) Chemical Abuse: (CHAB/CPS): reflects degree to which person abuses alcohol or drugs.

2.) Thought Disturbance: (THDIS/CPS): reflects disorganization in thinking, confusion, and feelings of unreality.
High scorers tend to be emotionally upset, and may be moody, hypochondriacal and miserable.

3.) Antisocial Tendencies: (ANTI/CPS): reflects a hostile animosity and socially defiant attitude in the person, as well as a willingness to be

assaultive or threatening. High scorers tend to be cynical of other individuals, interpreting their behaviour as unjust or always self-deserving.

4.) Self-Depreciation: (SELF/CPS): reflects the degree to which the person degrades himself or his actions. High scores may reflect despondency, depression, and possible suicidal tendencies.

5.) Validity: reflects the degree to which an acceptable test-taking attitude has been maintained. High scores suggest answering carelessly or facetiously, or a lack of understanding.

Carlson (1982) reported test-retest reliability of .87 and .92 for scales 1 through 4, with a coefficient of .50 for the validity scale. Internal consistency ranged from .67 to .82, with that for the validity scale being only .18, which Carlson (1982) attributes to restricted variance. The CPS scales have low correlations (-.15 to .21) with I.Q. scores, which confirms their intended utility with prison populations where literacy is a problem. In a comparison with MMPI scores, Carlson (1982) reported moderately high correlations (.36 to .70) between the Thought Disturbance (TD) scale and all of the clinical scales of the MMPI. There were substantial correlations between the Self-Depreciation (SD) scale and the F, D, Pd,

Pa, Pt, Sc, and Si scales of the MMPI, ranging from .36 to .52. The other scales showed very low correlations with the MMPI scales.

Carlson (1982) also reports data which show that CPS scores are sensitive to psychological changes related to treatment, and the cluster analysis studies show that CPS scores can reliably discriminate between different types of inmates.

Automatic Thoughts Questionnaire (ATQ)

The Automatic Thoughts Questionnaire (Hollon and Kendall, 1980) is a 30 item instrument devised to measure the frequency of occurrence of automatic negative thoughts. These negative thoughts are said to be related to cognitive factors which play a role in the development and maintenance of depression (Beck, 1967). Subjects are instructed to rate each thought, or negative self-statement, on a 5-point scale, ranging from "not at all" to "all the time". In a sample of 312 college students, split-half reliability was found to be .97, and the alpha coefficient was reported to be .96 (Hollon and Kendall, 1980).

Hollon and Kendall (1980) found that the ATQ could significantly distinguish between high and low scorers on the Beck Depression Inventory, and Hollon and Ryan (1983) found that the ATQ could differentiate between depressed and nondepressed patients in a clinical sample.

Correctional Institutions Environment Scale (CIES, Form R)

Form R of the CIES consists of 90 true or false items designed to measure the social environments of correctional programs. An overview of the conceptual background of the scale and other information are presented by Moos (1974). There are 9 subscales labelled Involvement (CIES-I), Support (CIES-S), Expressiveness (CIES-E), Autonomy (CIES-A), Practical Orientation (CIES-PO), Personal Problem Orientation (CIES-PPO), Order and Organization (CIES-00), Clarity (CIES-C), and Staff Control (CIES-SC).

Subscale internal consistencies range from .54 to .72 (KR20), with most subscale intercorrelations below .40 (Moos, 1974). The CIES has been shown to have adequate test-retest reliability (.65 to .80) and is sensitive to differences among correctional programs. It provides measures of inmates' perceptions of their social environment that have low correlations with social desirability response bias (Moos, 1974).

RESULTS

Data from the SBQ were used to assign subjects to one of three parasuicide groups, or a comparison group, according to their reports of past parasuicidal behaviours. The Serious Attempter group, (SA, n=22) consisted of individuals who reported suicide attempts in which they had really hoped to die. The Non-Serious Attempter group (NS, n-22) consisted of individuals who reported suicide attempts, but indicated uncertainty about their wish to die. The Self-Mutilation group, (SM, n=29) included subjects who reported only deliberate self-injuries that were not construed as suicide attempts by themselves or anybody else. The No History group (NoHx, n=54) consisted of subjects who reported no attempts to kill themselves and no episodes of deliberate self-injury.

All data analyses were conducted using the SPSS-X program packages (SPSS Inc., 1983). Multivariate analysis of variance (MANOVA) was conducted to test the overall equality of group means on a total of thirty-eight variables derived from the test instruments described in the Methods section. The overall results were highly significant ($F(117,240)=1.68$, $p<.000$). MANOVAs using ratings of the current quality of life, and depression scores, as covariants were conducted, with the results still significant beyond the .01 level. Group means and standard

deviations on the variables tested, along with univariate F-values are presented in Table 1. There was a noticeable trend for the two suicide attempt groups (NS and SA) to have scores in the direction of greater psychopathology than the other two groups. Pair-wise group comparisons were conducted to determine which variables differentiated significantly between the various groups. Because of the inferential problems associated with large-scale multiple comparisons, a Bonferroni procedure was followed, in which the desired error rate for the family of comparisons is divided by the number of significance tests. It was decided that an overall error rate of .10 would be acceptable (Neuringer, 1976; Farberow and MacKinnon, 1976), and that the significance level for each comparison should be set to .0004, in order to maintain the overall error rate of .10. With six comparisons on 37 variables, there were over 200 t-tests conducted (.10/250=.0004). Table 2 shows the results of the pair-wise group comparisons and the significance levels.

The results indicated that there were no variables which differentiated each of the four groups from one another beyond the .05 level. There were no variables which differentiated each parasuicide group from one another beyond the .05 level. There were several variables

TABLE 1

Parasuicide Type Group Means

	NoHx (n=54) mean/SD	SM (N=29) mean/SD	NS (n=22) mean/SD	SA (n=22) mean/SD	UNIV F	P-Value
IDEA/YR	.56 (.86)	1.10 (1.08)	2.05 (1.49)	2.36 (1.60)	15.99	.0000
ATT/LIFE	.00 (.00)	.89 (1.08)	2.95 (2.34)	3.54 (2.78)	35.19	.0000
SM/LIFE	.00 (.00)	1.28 (1.73)	1.23 (1.77)	1.55 (2.63)	7.96	.0001
CHANCE/YR	.22 (.79)	.41 (1.05)	.40 (1.05)	1.22 (1.50)	4.87	.0030
DIE/YEAR	2.43 (2.09)	2.96 (1.88)	2.36 (1.81)	3.68 (1.64)	2.63	.0500
PROB.SOLVED	1.72 (1.83)	2.03 (1.82)	2.50 (1.99)	3.27 (1.83)	3.89	.0100
QUAL.LIFE	2.88 (1.22)	2.86 (1.18)	2.27 (1.31)	2.31 (1.35)	2.08	.1061
COPE/WORSE	3.52 (1.50)	2.97 (1.63)	1.95 (1.43)	2.50 (1.63)	6.12	.0006
HPST	4.18 (3.68)	4.72 (3.79)	6.68 (4.11)	7.36 (5.68)	4.04	.0090
BDIT	13.88 (7.51)	15.48 (9.18)	22.09 (10.34)	24.81 (13.80)	8.71	.0000
ATQT	57.70 (19.33)	63.25 (23.57)	87.95 (30.53)	77.00 (28.23)	9.64	.0000
CROWNE	16.11 (5.68)	15.24 (6.26)	13.13 (5.14)	14.31 (5.05)	1.61	.1887
SPST	58.75 (16.68)	62.13 (17.21)	78.41 (20.20)	76.81 (25.52)	8.35	.0000
SELF.SPS	13.89 (3.20)	14.37 (3.57)	18.54 (4.51)	16.09 (5.08)	8.24	.0000
HSTY.SPS	12.55 (3.96)	13.86 (4.71)	16.04 (4.68)	15.36 (5.18)	4.06	.0086
EDSD	27.98 (6.39)	25.41 (7.45)	19.95 (7.51)	22.27 (8.23)	7.82	.0001

Note: NoHx = no history of parasuicide;
SM = reported self-mutilation;
NS - non-serious attempters;
SA = serious attempters

TABLE 1 (continued...)

Parasuicide Type Group Means

	NoHx (n=54) mean/50	SM (N=29) mean/SD	NS (n=22) mean/SD	SA (n=22) mean/SD	UNIV F	P-Value
RFLT	4.27 (.74)	3.81 (.86)	3.67 (.67)	3.32 (.82)	9.01	.0000
FEAR/RFL	2.61 (1.11)	2.19 (.95)	2.55 (.93)	2.07 (.90)	2.09	.1049
SOC/RFL	3.19 (1.67)	2.54 (1.47)	2.72 (1.43)	2.34 (1.09)	2.16	.0959
FAM/RFL	4.26 (1.27)	3.88 (1.42)	3.70 (1.51)	3.05 (1.73)	3.75	.0130
MOR/RFL	3.59 (1.61)	3.14 (1.42)	3.05 (1.57)	2.53 (1.18)	2.75	.0456
CHLD/RFL	4.37 (1.75)	3.68 (1.82)	3.75 (1.93)	4.16 (2.04)	1.11	.3496
COPE/RFL	4.99 (.78)	4.55 (1.08)	4.19 (.70)	3.90 (1.04)	9.24	.0000
CHAB/CPS	26.22 (5.68)	24.78 (6.79)	28.77 (7.69)	31.86 (6.31)	6.01	.0007
THDIS/CPS	28.77 (7.56)	31.32 (8.66)	36.40 (10.78)	36.36 (9.54)	6.13	.0006
ANTI/CPS	39.87 (9.47)	41.75 (9.46)	44.86 (10.05)	44.63 (11.43)	2.98	.0338
CIES-I	3.03 (2.00)	3.25 (1.63)	3.68 (2.25)	3.23 (1.92)	.55	.6436
CIES-S	2.51 (1.64)	2.55 (1.64)	2.81 (2.13)	2.66 (1.98)	.17	.9182
CIES-E	2.53 (1.35)	2.81 (1.33)	2.86 (2.00)	3.28 (1.70)	1.24	.2968
CIES-A	3.26 (1.95)	3.40 (1.78)	4.04 (1.88)	3.19 (1.60)	1.67	.3636
CIES-PO	3.45 (1.69)	3.62 (1.80)	3.13 (2.09)	3.33 (1.52)	.34	.7985
CIES-PPO	2.52 (1.39)	2.66 (1.33)	2.95 (1.88)	2.33 (1.85)	.63	.5943
CIES-OO	3.33 (2.66)	3.55 (2.93)	3.45 (2.48)	3.33 (2.39)	.05	.9863
CIES-C	2.96 (1.94)	3.25 (2.33)	4.00 (2.24)	2.80 (1.83)	1.58	.1974
CIES-SC	6.18 (1.48)	5.88 (1.45)	5.90 (1.87)	6.14 (1.76)	.30	.8751
AGE	28.01 (8.45)	27.20 (9.30)	27.40 (7.37)	27.86 (7.91)	.07	.9755
TIME DONE	38.20 (49.31)	48.41 (50.76)	59.95 (88.18)	70.76 (67.36)	1.67	.1772
NO. TIMES	4.18 (4.65)	4.34 (4.90)	3.90 (4.11)	7.63 (10.22)	2.65	.0520

TABLE 2

t-values of Pair-wise Group Comparisons and Significance Levels

	NoHx Compared To:			SM vs	SM vs	NS vs
	SA	NS	SM	SA	NS	SA
IDEA/YR	6.01***	4.95***	2.00*	3.75***	2.80*	.89
ATT/LIFE	8.81***	7.35***	2.44*	5.89***	4.56***	1.23
SM/LIFE	3.95***	3.13*	3.58**	0.62	-.11	.68
CHANCE/YR	3.79***	0.70	.79	2.74*	.02	2.56*
DIE/YEAR	2.57*	0.13	1.22	1.31	-1.10	2.27*
PROB.SOLVED	3.30*	1.35	.73	2.35*	.89	1.38
QUAL.LIFE	-1.80	-1.94	-.09	-1.53	-1.66	.12
COPE/WORSE	-2.61*	-4.00***	-1.56	-1.06	-2.31*	1.17
HPST	3.00*	2.36*	.56	2.23*	1.65	.54
BDIT	4.45***	3.34**	.71	3.40**	2.40*	.90
ATQT	3.16*	4.95***	.98	2.00*	3.59**	-1.50
CROWNE	-1.26	-2.09*	-.67	-.58	-1.32	.70
SPST	3.72***	4.05***	.76	2.71*	3.00*	-.27
SELF.SPS	2.23*	4.72***	.54	1.56	3.78***	-2.09*
HSTY.SPS	2.47*	3.07*	1.26	1.18	1.72	.50
EDSD	-3.15*	-4.42***	-1.56	-1.55	-2.70*	1.07
RFLT	-4.86***	-3.07*	-2.54*	-2.20*	-.64	-1.50
FEAR/RFL	-2.00*	- .23	-1.76	-.42	1.24	-1.57
SOC/RFL	-2.23*	-1.22	-1.84	-.46	.42	-.84
FAM/RFL	-3.29*	-1.54	-1.11	-2.02*	-.45	-1.48
MOR/RFL	-2.79*	-1.42	-1.29	-1.43	-.20	-1.16
CHLD/RFL	- .45	-1.30	-1.59	.90	.13	.73
COPE/RFL	-4.78***	-3.51**	-2.13*	-2.51*	-1.38	-1.07
CHAB/CPS	3.47**	1.57	-0.96	3.86***	2.17*	1.59
THDIS/CPS	3.41**	3.43**	1.24	2.02*	2.03*	-.02
ANTI/CPS	2.69*	1.99*	.81	1.72	1.10	.59
CIES-I	.39	1.29	.47	-.04	.75	-.74
CIES-S	.34	.67	.11	.21	.50	-.27
CIES-E	1.90	.85	.78	1.04	.15	.89
CIES-A	-.15	1.67	.32	-.40	1.20	1.51
CIES-PO	-.26	-.70	.42	-.58	-.97	.36
CIES-PPO	-.48	1.08	.37	-.73	.64	-1.30
CIES-OO	-.01	.17	.34	.28	-.13	-.15
CIES-C	-.29	1.97	.61	-.74	1.24	-1.88
CIES-SC	-.11	-.69	-.79	.55	.04	.48
AGE	-.07	-.29	-.42	.28	.08	.18
TIME DONE	2.07*	1.39	.73	1.28	.66	.57

* = P<.05
** = P<.001
*** = P<.0004

which differentiated the No History group from every parasuicide group at least beyond the .05 level: frequency of suicidal ideation in the past year; lifetime total of suicide attempts; lifetime total of self-mutilation episodes; total score on the Reasons for Living Inventory; scores on the Survival and Coping Beliefs subscale of the RFL Inventory.

When the No History group was compared with Serious Attempters, there were several differences significant beyond the .0004 level. The SA group reported higher frequencies of suicidal ideation in the past year, lifetime attempts, and lifetime self-injury. They reported significantly higher levels of depressive symptoms on the Beck Depression Inventory and had higher risk scores on the Suicide Probability Scale. The Serious Attempters gave higher ratings of their chance of a suicide attempt in the coming year, and lower ratings of the importance of various Reasons for Living, including their Surviving and Coping Beliefs. Although the Serious Attempters had higher scores on the Chemical Abuse and Thought Disturbance scales of the Carlson Psychological Survey (CHAB/CPS, THDIS/CPS), the differences were significant at only the .001 level. A number of variables differentiated the Serious Attempters at the .05 level: the Serious Attempters rated their chance of dying by suicide in the coming year as higher, gave higher

ratings of suicide as a solution to their problems, gave lower ratings of their ability to cope if their situation got worse, had higher scores on measures of hopelessness, negative thoughts about the thoughts about the self, (ATQT), self-depreciation, hostility, antisocial tendencies, and amount of time served. They had lower scores on the Edwards scale of Social Desirability, and attached low importance to fear of suicide, social disapproval, family responsibilities and moral concerns as reasons for not committing suicide (RFL subscales).

In the No Hx versus the Non-Serious group comparison there were a number of differences significant beyond the .0004 level. The Non-Serious Attempters reported higher frequencies of suicidal ideation in the past year and lifetime attempts. They had lower ratings of their ability to cope if their situation were to get worse, and lower scores on the Edwards scale of Social Desirability. Levels of negative self-thoughts (ATQT) and self-depreciation (SPS) were higher, as were risk scores on the Suicide Probability Scale. Three variables differentiated at the .001 level: BDI depression scores, Thought Disturbance, and low ratings of Survival and Coping Beliefs as reasons for living (COPE/RFL). Variables differentiating at the .05 level were: lifetime self-mutilation episodes, hopelessness, Crowne-Marlowe Social Desirability Scale, hostility, RFL total score, and antisocial tendencies (ANTI/CPS).

There were no differences between the No Hx group and the Self-Mutilation group at the .0004 level. The Self-Mutilation group were more likely to report ideation in the past year and attempts which were not distinguished from deliberate self-injury. They gave lower ratings of importance for various Reasons for Living including Survival and Coping Beliefs (RFLT, COPE/RFL), but these differed only at the .05 level. There were no other noteworthy differences between the two groups.

When the Non-Serious Attempters (NS) were compared with the Serious Attempters (SA), there were no differences beyond the .001 level. At the .05 level, the Serious Attempters gave higher ratings of their likelihood of attempting suicide in the coming year, and gave higher ratings of their chance of dying from an attempt in the coming year, while the Non-Serious Attempters had higher levels of self-depreciation.

Only one variable differentiated between the Non-Serious (NS) group and the Self-Mutilation (SM) group at the .0004 level: the NS group had higher levels of self-depreciation. At the .001 level, the NS group had a greater frequency of negative self-thoughts (ATQT). At the .05 level, the NS group reported a higher frequency of suicidal ideation in the past year, and had higher scores on Depression, Chemical Abuse, Thought Disturbance, and the Suicide Probability Scale. They had lower scores on the

Edwards Scale of Social Desirability, and gave lower ratings of their ability to cope if their situation were to worsen.

When the Self-Mutilation (SM) group was compared with the Serious Attempt (SA) group, there were three differences significant at the .0004 level: the SA group reported higher frequencies of ideation in the past year and lifetime attempts, and had higher levels of chemical abuse. At the .001 level, the SA group had higher scores on the Depression Inventory. At the .05 level the SA group rated their chance of an attempt in the coming year as higher, rated suicide higher as a solution to their problems, and had higher levels of hopelessness, negative self-thoughts (ATQT), and thought disturbance, with higher risk scores on the Suicide Probability Scale. The SM group had higher Reasons For Living total scores, and gave higher ratings of Family Responsibilities and Survival and Coping Beliefs as reasons for living.

A number of variables showed no significant differences for any of the group comparisons: ratings of the quality of life, ratings of having children as a reason for not committing suicide, and age. There were also no significant differences on any of the subscales of the Correctional Institutions Environmental Survey (CIES).

Categorical Comparisons

A number of categorical variables were cross tabulated across the four groups: person vs property offences, marital status, having children under 18 years of age, living alone prior to admission, number of friends, type of family raised in, family history of suicide attempts, family history of completed suicide, education, presence of a plan for suicide, previous disclosure of suicidal intent, availability of a suicide method. The numbers and percentages of subjects in the various categories of interest are presented in Table 3. For dichotomized variables, data are presented for only one category; frequencies for the remaining category can be extrapolated from the data in the table by comparison with the group sizes.

Tests of overall differences in group proportions were significant beyond the .05 level for only three variables: presence of a plan for suicide (Chi-square (3df) = (26.20, $p<.0002$); previous disclosure of intent (Chi-square (3df) =16.84, $p<.0090$); educational level (Chi-square (9df) = 18.88, $p<.0300$).

Serious Attempters (SA) were much more likely to report having a definite suicide plan (54%), compared to the NoHx subjects (13%: $p<.0002$), the SM subjects (21%, $p<.0006$), and the Non-Serious Attempters (18%, $p<.04$). Only 4% of the NoHx group had disclosed suicidal intent

TABLE 3

NUMBER OF SUBJECTS REPORTING RISK FACTORS

BY PARASUICIDE TYPE

	NO HX (n=54) n* %	SM (n=29) n* %	NS (n=22) n* %	SA (n=22) n* %	Chi2(df)	P
Person offences	34 (63)	21 (72)	13 (59)	15 (68)	1.23 (3)	.7400
Married/CL	26 (48)	11 (38)	5 (23)	6 (27)	5.62 (3)	.1300
Kids <18 yr.	22 (41)	9 (31)	5 (23)	6 (27)	2.88 (3)	.4100
Living alone	43 (80)	20 (69)	18 (82)	15 (68)	2.28 (3)	.5200
>1 Friend	38 (70)	25 (86)	15 (68)	17 (77)	3.15 (3)	.3700
Raised by:					3.52 (6)	.7400
- Both parents	22 (40)	12 (41)	5 (23)	9 (41)		
- Single parent	6 (11)	2 (7)	4 (18)	2 (9)		
- Foster/gp.	26 (48)	15 (52)	13 (59)	11 (50)		
Fam. Hx. (Sui)	4 (7)	7 (24)	3 (14)	5 (23)	5.41 (3)	.1400
Fam. Hx. (Att)	8 (15)	8 (28)	8 (36)	8 (36)	6.08 (3)	.1100
Plan: No	38 (70)	22 (76)	11 (50)	5 (23)	26.20 (6)	.0002
" Vague	9 (17)	1 (3)	7 (32)	5 (23)		
" Definite	7 (13)	6 (21)	4 (18)	12 (54)		
Disclosed intent:					16.84 (6)	.0090
No	40 (74)	15 (52)	13 (59)	9 (41)		
Once	12 (22)	8 (27)	2 (9)	8 (36)		
> Once	2 (4)	6 (21)	7 (32)	5 (23)		
Method Avail.					9.62 (6)	.1400
No	13 (24)	5 (17)	2 (9)	2 (9)		
Maybe	13 (24)	10 (34)	6 (27)	2 (9)		
Definitely	28 (52)	14 (48)	14 (64)	18 (82)		
Education: < 8	9 (17)	3 (10)	5 (23)	11 (50)	18.88 (9)	.0300
" :9 to 11	31 (57)	14 (48)	10 (46)	7 (32)		
" :Grad	10 (19)	7 (24)	6 (27)	1 (4)		
" :Coll	4 (7)	5 (17)	1 (4)	3 (14)		

Note: n* = number of each parasuicide type reporting the category of interest. Number of subjects in remaining category can be derived by subtracting "n*" from group size.

more than once, compared to 21% of the SM group ($p<.050$), 32% of the NS group ($p<.002$), and 23% of the SA group ($p<.006$). With respect to educational level, 50% of the Serious Attempters had less than a Grade 8 education, compared to 17% of the NoHx subjects ($p<.01$), and 10% of the SM subjects ($p<.01$). Of the Serious Attempters, 82% considered a method of killing themselves to be definitely available to them, compared to 52% of the NoHx group ($p<.05$), and 48% of the SM group ($p<.05$). Both the Serious and Non-Serious Attempters reported a higher incidence of suicide attempts in their family histories (36%) than the NoHx group (15%, $p<.04$). The Non-Serious Attempters were less likely to be married or living common-law (23%) than the NoHx subjects (48%, $p<.05$). Fewer subjects in all three parasuicide groups reported having children under the age of 18 than did the comparison group, but none of the differences were significant at the .05 level. There were no noteworthy differences in the proportions of subjects living alone, or having more than one friend, or being raised by single parents or in a foster/group home situation. There were no differences in the proportion of subjects having criminal backgrounds of "person" offenses. The suicide attempt groups did not differ in the frequencies of attempts over different time intervals. There were only four subjects who reported attempts which could have occurred during their current admission. There were no

overall differences in the proportions of subjects having a family history of completed suicide, although the Self-Mutilation group differed from the NoHx group at the .05 level (24% vs. 7%).

Discriminant Function Analysis.

To assess the degree to which the four groups could be distinguished from one another, discriminant function analysis was conducted, using the group of dependent variables as postdictors for classification into groups. The variables which related directly to parasuicidal behaviour, such as number of previous attempts or self-injuries, and variables which were redundant were not included in the analysis (i.e. 3 analagous measures of self-depreciation or negative self-evaluation were available). Categorical background variables were included, to make a total of 30 variables. Subjects were randomly divided into two samples, so that classification weights derived from the first sample could be used to classify the subjects in the second sample. This procedure constituted a form of external cross-validation.

Three functions were derived, with an average squared canonical correlation of .64. Using the standard adjustment to R-squared, the adjusted averaged squared canonical correlation was calculated to be .34.

When the classification weights were used to classify

the sample from which they had been derived, the percentage of Hit-Rates for each group was as follows: NoHx group = 90%, SM group = 94%, NS group = 78%, SA group = 89%, with 89% overall accuracy. When the classification weights were applied to the "Hold-Out" sample the accuracy was markedly diminished: NoHx group = 39%, SM group = 46%, NS group = 39%, SA group = 31%, with 39% overall accuracy. By chance, accuracy of 25% would be expected, with 37% possible by merely classifying all subjects as NoHx.

DISCUSSION

The main purpose of the present study was to examine whether self-report instruments can be used to distinguish between prison inmates with different types of parasuicidal histories, the measures of interest being related to risk factors that have been described in the suicidology literature. Four groups were defined on the basis of self-reports of the degree to which their parasuicidal behaviours had been associated with suicidal intent, or the wish to die. MANOVA results suggested highly significant overall group differences among the 38 variables included.

The three parasuicide groups, Self-Mutilators (SM), Non-Serious Attempters (NS), and Serious Attempters (SA) were contrasted with each other, and with a comparison group reporting no history of parasuicide (NoHx). Because

of the inferential problems associated with exploratory multiple significance testing, the discussion will emphasize results that were significant beyond the .0004 level. Proportionately less confidence should be attached to the results at the .001 or .05 levels of significance, although they might be worth exploring in studies which can concentrate statistical power on a smaller number of variables.

There were no significant differences among the four groups in terms of age, ratings of the current quality of life, and responsibilities to children as a reason for not committing suicide. While age is considered to be a risk factor for suicide, it is not predictive of parasuicide, except to the extent that the rate is highest among the 15 - 34 age category (Kreitman, 1986; Hawton, 1987). Generally, dissatisfaction with life is considered to be the hallmark of parasuicide and one might have expected group differences on this variable, but the prison inmates in the current sample uniformly rated the quality of their lives as being low. Similarly, there were no differences on any of the Correctional Institutions Environmental Survey subscales, with all groups giving low ratings of satisfaction with the prison environment.

The fact that all groups gave moderately high ratings of the importance of having children as a reason for living is consistent with suggestions in the literature that having

children under the age of 18 exerts a protective effect in terms of suicide risk (Fawcett et al 1987). There were no differences across groups in terms of type of criminal background, marital status, living in isolation prior to admission, number of friends, coming from a broken home or being raised in a foster or group home situation. Fewer serious and non-serious attempters reported having children under the age of 18, compared to the other two groups, but the difference was not significant. There was a trend for the two suicide attempt groups to report a higher proportion of suicide attempts among relatives (36%), compared to the NoHx group, but the difference was significant at only the .05 level. The proportion of 36% is consistent with rates ranging from 36% to 42% found in other studies cited by Chiles, Strosahl, McMurtray, and Linehan (1985). Chiles et al (1984) discussed the possibility of modelling effects upon suicidal behaviour, suggesting that a completed suicide in the family may "innoculate" individuals against suicide. In the present study, the self-mutilation group had the highest proportion of relatives who suicided, but differed from the NoHx group at only the .05 level.

There were only minimal overall differences between the SM group and the comparison group (NoHx), and only at the .05 level: the SM subjects reported a slightly higher frequency of recent suicidal ideation, and slightly lower ratings of various reasons for living, specifically survival

and coping beliefs on the RFL inventory. The absence of highly significant differences between these two groups is consistent with the findings of the Correctional Services Canada (1981) study, which concluded that inmates who self-injure cannot be differentiated from the general population. Compared to the other two parasuicide groups, the self-mutilation group had significantly lower levels of chemical abuse and were much less prone to negative self-evaluation than the non-serious attempters.. The SM group had lower levels of depressive symptoms than the SA group, but the difference was significant at only the .001 level. They were also much less likely to report high frequencies of suicidal ideation in the past year, compared to the SA group. Less significant differences were found for hopelessness, thought disturbance, viewing suicide as a solution to problems, and scores on the Suicide Probability Scale (Cull and Gill, 1981). Pattison and Kahan (1983) and Simpson (1976) have argued the merits of considering deliberate self-injury as a separate clinical syndrome, with distinguishing features. The results of the present study do not reveal any particularly distinguishing features among this group of inmates, the most distinguishing feature from the comparison group being the fact that they engage in self-injury. However, their frequency of self-injury did not differ significantly from that for the two suicide attempt groups. One is reminded

of the assertion by Shaffer (1982) that the only thing distinguishing suicidal from non-suicidal individuals is their propensity to repeat self-destructive acts. The results of the present study would support such a conclusion with regards to the self-mutilation group. However, it may be that the SM group might have shown more differences on measures of manipulativeness and extrapunitive hostility, had such measures been included. McKay and Ross (1978), among others, have noted the relationship between self-mutilation and environmental factors. While it is possible that SM subjects may be more reactive to environmental factors in some way, they did not differ on any of the CIES scales. All subjects gave uniformly low ratings of satisfaction with the prison environment.

Contrasted with the NoHx group, the serious attempters were much more likely to report a chance of a suicide attempt within one year, were more likely than the other groups to have a definite plan for committing suicide and were more likely to have previously disclosed suicidal intent on more than one occasion. They were also slightly more certain that the means for killing themselves were available to them. A higher proportion had less than a grade 8 education, and they were more likely to see suicide as a solution to their problems. They attached much less importance to various reasons for not killing oneself,

especially with regards to their beliefs about their ability to cope and survive in the world. They reported many more symptoms of depression and had significantly higher risk scores on the Suicide Probability Scale. At a lesser significance level (.001), they had higher scores on measures of chemical abuse and thought disturbance. The Non-serious Attempt group did not differ from the comparison group in the number of previous episodes of deliberate self-injury (self-mutilation), nor were they more likely to have a definite plan for suicide or believe that the means were available to them, and they did not differ in their estimates of the chance that they would attempt suicide within the coming year. They did not differ in their ratings of suicide as a viable solution to their problems, nor did they differ in their ratings of the importance of various popular reasons for not killing oneself with the exception of beliefs about their ability to cope and survive in the world. They did not differ in their degree of chemical abuse, nor in the amount of time that they had served in prison. However, they were much more likely to have disclosed suicidal intent on more than one occasion. They reported higher frequencies of recent suicidal ideation and negative self-evaluation, and had the highest risk scores on the Suicide Probability Scale. They also had the lowest scores on the Edwards Social Desirability Scale, to a highly significant degree.

Both suicide attempt groups were differentiated from the comparison group at a low level of significance (.05) by higher scores on hopelessness, hostility, and antisocial tendencies. While the two suicide attempt groups had slightly different patterns of significant differences from the comparison group, they did not differ from one another on any variable at better than the .05 level. The only differences were slightly higher ratings of the chance of a suicide attempt in the coming year, and higher ratings of the chance of dying following a suicide attempt in the coming year, for the serious group. The non-serious group had slightly higher scores on the negative self-evaluation scale of the Suicide Probability Scale.

The picture that emerges of the serious attempters is consistent with descriptions of high risk characteristics available in the literature. A high proportion have a definite plan for suicide, and believe that the means to kill themselves are available to them; both of these items represent important criteria in establishing suicide risk (Beck, Kovacs and Weissman, 1979; Morgan, 1979). Their average Beck Depression Inventory score falls in the lower end of the severely depressed range and they have the highest frequency of previous attempts and episodes of deliberate self-injury. They have the highest scores on chemical abuse and have scores on the Suicide Probability Scale that are nearly two standard deviations above the

mean for the general population. There is a well known relationship between depression, substance abuse and both suicide and parasuicide (Kreitman, 1977, 1986; Hankoff, 1979; Murphy, 1988). Solomon and Arnon (1979) have suggested that there are common etiological factors underlying depression, substance abuse and suicide. Millon (1981) has noted the high frequency of passive-aggressive individuals found "drying out" in jails, and suggests that their high levels of hostility and poor impulse control may make them especially prone to "acting out" behaviours. Kurz et al (1987) confirmed the well-established relationship between multiple previous parasuicide episodes and subsequent suicide.

The combination of depression and alienation leads to high risk (Kreitman, 1977; Morgan, 1979; Roy, 1982; Hawton, 1987). While the differences were only at the .05 level, the SA group did have the lowest gradings of importance for various reasons for living, and they did have the highest mean score on the antisocial tendencies scale of the Carlson Psychological Survey (1982). Antisocial personality disorder is one of the few stable predictors of subsequent parasuicide (Bagley and Greer, 1976; Kreitman, 1977; Morgan, 1979), and Backett (1987) found it to be the most prevalent primary diagnosis among completed prison suicides. The combination of alienation, depression, and substance abuse is also fairly common among prison suicides (Correctional

Services Canada, 1981; Denoon, 1983).

Beck, Steer, Kovacs and Garrison (1985) reported that the only sign predictive of suicide in a 10-year prospective study was a Hopelessness Scale score over 9. The mean hopelessness score for the serious attempter group in the present study was 7.36, with a standard deviation of 5.68, which suggests that a number of the SA inmates had hopelessness scores over the cutting point of 9.

The characteristics of the Non-serious Attempt group are also consistent with previous findings in the literature. Stengell (1964), Kreitman (1977), and Morgan (1979) have stressed the communicative aspects of parasuicide. In the present study, the NS group were more likely to have told other people of their suicide intentions on multiple occasions, compared to the NoHx group, and relatively fewer of them had told somebody of their plans on only one occasion. They were less likely to have a definite suicide plan, compared to the seriousness attempt group. There was no difference in their self-reported chance of a future attempt compared to the NoHx group, and they did not differ in their ratings of the importance of various reasons for living, which suggests that they are not as alienated from life as serious attempters. One of the more interesting findings was the highly significant difference of lower scores on the Edwards Social Desirability Scale. While Pallis and Birtchnell

(1976) found that low social desirability scores characterized suicide attempters in general, Pallis and Birtchnell (1977) found that most of the difference was attributable to non-serious attempters, who had social desirability scores more than one standard deviation below the general mean. They concluded that non-serious attempters had more abnormal personalities, characterized by undue reliance upon others, lack of self-confidence, inability to cope, helplessness, vulnerability to stress, and inclination to worry. In the present study, the NS group gave significantly lower ratings of their ability to cope, and significantly higher scores on measures of negative self-evaluation and self-depreciation. The NS group also did not differ from the comparison group on their ratings of the likelihood that they would die if they attempted suicide. Their mean score on the BDI fell into the moderately depressed category. Also noteworthy was the relative absence of serious problems with chemical abuse.

A number of researchers have construed low social desirability scores as reflecting levels of psychological maladjustment or anxiety (Nevid, 1983; McCrae and Costa, 1983). Kreitman (1977) found that parasuicides differed from normals on a variety of measures of adjustment, particularly those related to second-order anxiety. Anxiety may explain the high levels of self-devaluation and fear of being unable to cope (helplessness) among the non-

serious attempters. Kreitman (1977) described parasuicidal individuals as responding to crises by over-reacting with desperate, manipulative behaviour and intense self-pity. It may be that NS attempters are subject to panic-like episodes in which they respond impulsively. This may explain why so few of the NS group reported having a definite suicide plan, compared to the serious group.

Clinically, it is noted that some suicides have an aura of calmness and deliberation as they carry out their plans, such as disposing of possessions. Perhaps their anxiety and despondency lift as they settle on a course of action. Farmer (1979) suggests that suicidal behaviours should be classified on a continuum of impulsivity versus deliberation, rather than on fatality of outcome. Morgan (1979) found that 65% of parasuicides had acted impulsively and denied making plans the same day. Unfortunately, no direct measures of anxiety or impulsivity were included in the present study, and the theoretical significance of low social desirability scores remains to be established (Strosahl et al, 1984; Cole, 1988).

Although highly significant differences appeared between various groups on a number of variables, it was not clear to what degree individuals could be differentiated from one another on the basis of the discriminating variables. Initially, discriminant function analysis

classification accuracy fell dramatically upon cross-validation. The results suggest that the classification weights that were derived lacked stability. A larger derivation sample might allow for better estimation of weights. However, the adjusted averaged squared canonical correlation suggested that substantial variance remains unexplained.

It may be that the distinctions between parasuicidal behaviours, non-suicidal behaviours, and suicide are unexplainable. The current state of knowledge is inadequate to the task (Pokorny, 1983). Kreitman (1977) and Morgan (1979) have noted that the current predictors and risk factors have weak associations and limited predictive validity. Shaffer (1982) has stated the propensity for further suicidal acts is the only distinguishing factor, and the clinical rule of thumb is that the best predictor of future suicidal behaviour is past suicidal behaviour (Clum, Patsiokas and Luscomb, 1979). Such statements have a tautological quality, but their validity is reflected in the results of this study, in that the self-mutilation group differed little from the comparison group, except for their self-injury behaviour, and the non-serious attempters differed little from serious attempters, except in their attitutes towards future attempts (repetitiveness) and the definiteness of their plans (seriousness). Thus, the two dimensions of

repetition and seriousness found in cluster analyses of suicidal behaviours (Paykel and Rassaby, 1978; Kurz et al, 1987) find a weak degree of support in the present study.

Limitations

With the given sample size and the large number of variables and resulting significance tests, the study lacks statistical power. Only results beyond the .0004 level of significance can be interpreted with confidence if a .10 overall error rate for the family of comparisons is to be maintained. For categorical cross-tabulations with expected cell frequencies of less than 10, the results are difficult to interpret. A larger sample size is called for, and/or a reduction in the number of variables studied. Differences which were obtained and the .05 level were in the direction which would be expected from the literature, but a low level of confidence can be attached to the results. The large number of variables is unwieldy for discriminant function analysis, and a number of the variables were redundant and highly intercorrelated, which would lead to difficulties in the interpretation of derived functions. In order to assess the relative importance or contribution of specific variables to group discrimination, a large number of subsets of variables would have to be examined in order to select the "best" variables (Huberty, 1984).

Interpretation and generalization of the findings are

limited by the exclusive reliance upon self-report measures. Different results may have been obtained had objective data from inmates files been used, or if ratings by clinicians and standard diagnostic interviews had been utilized. However, as Steadman et al (1987) have noted, the confidentiality of records is an issue, and cost and time constraints make diagnostic interviews impractical for many projects. Although diagnostic information would have been valuable for comparison, the main focus was on the use of self-report measures in classifying prison inmates. In this regard, the issues of confidentiality and anonymity point out a potentially serious limitation in generalizability. While the issue of valid self-disclosure will be addressed in the secondary study attached to this report, it is generally considered that the responses of prison inmates to research are generally good and that they are fairly reliable when suitable rapport with the researcher has been obtained (Repucci and Clingempeel, 1978; Zamble, Porporino and Kalotay, 1984). Subjective assessment of the attitudes of the inmate sample towards the present study and the researcher was that the inmates, for the most part, were genuinely interested in participating, and that rapport was good. This does not necessarily enhance the validity of the study, however. Voluntary participation in a research study is different from completing a screening questionnaire administered by security staff as part of

prison routines. Under real life conditions, information disclosed in such instruments can be used to influence prison classification and assignment to programs (Carbonell, Megargee and Moorehead, 1984). Therefore, predictive validity established under conditions of confidentiality and anonymity may not generalize to administrative use.

The present research should be seen as a preliminary exploratory study, intended to provide directions for further, more sophisticated research.

The use of self-reported suicide intent as a criterion may have shortcomings, but support for such use has been demonstrated in the literature (Robbins and Alessi, 1985; Gispert et al, 1987). There is always the possibility that subjects may deny suicidal intent and thus contaminate the comparison sample. While comparison with objective records may have some utility, Correctional Services Canada (1981) and Denoon (1983) note that a substantial number of cases of self-injury have not been officially documented in the past.

It may have been useful to obtain information about specific methods of parasuicide, but it is well-established in the literature from prospective studies that the medical seriousness or lethality of methods is not predictive of either repeated parasuicide or eventual suicide (Kreitman, 1986; Fawcett et al, 1987, Hawton and Fagg, 1988). The "true" level of suicide intent is

difficult to establish (Kreitman, 1977), and in using self-report instruments (as in the MMPI) one is interested in determining whether or not what subjects actually say can be used in differentiating groups, aside from the issue of face validity. Finer criterion discriminations, such as subjects who said they hoped to die but used non-lethal methods, were beyond the scope of the present research, and would have required a much larger sample and different design. At any rate, the criterion used did demonstrate some degree of concurrent validity, in that the serious attempt group had more definite plans and methods in mind, and differed significantly from the comparison group on a number of variables in the pathological direction.

A related limitation involves the elapsed time intervals between the parasuicidal behaviours and assessment. Neuringer (1976) states that it is a dubious proposition that measures collected after an attempt reflect the state of the individual before, or during the attempt. Aside from the effects of treatment, it has been suggested that the act of deliberate self-harm can have a beneficial effect on psychiatric symptomatology, in terms of feedback, or a cathartic effect (Neuringer, 1976; Newson-Smith and Hirsch, 1979; Kreitman, 1986). Dyer and Kreitman (1984) have noted that delayed assessments can mask relationships with "state" variables such as hopelessness. However, clinicians often estimate

probabilities based on factors that cannot be observed, but can only be inferred by the patient's history (Kiev, 1976). The focus of the present research was on the concurrent validity of classifying inmates on the basis of self-reported historical information that might be included in an admission screening instrument. Although some discretion has to be exercised in determining the number of variables studied, it would have been prudent to include data on parasuicidal behaviour occurring both inside, and outside, the prison setting, as different factors and motivations may be involved.

The external validity of the results of this study is difficult to assess. The location was the largest provincial prison in British Columbia, housing inmates serving sentences up to "two years less a day" as well as those on remand status or awaiting transfer to other institutions. There are few programs or activities available to inmates, although there is a small school program available to the lower-security inmates, as are various institutional work assignments. Inmates generally have negative impressions of the institution, and often expressed a willingness to serve their time in a federal institution, where better programs were considered to be available.

The majority of the participants came from the low-security areas of the prison. Only 34% of the subjects

reported criminal histories consisting solely of property-related crimes, but it is doubtful that the sample could be considered as equivalent to maximum-security inmates in federal prisons, in terms of backgrounds of violence. Hare (1983) has published several reports of research conducted using inmates from the same institution as the present study; he reported that about 39% of the inmates in his sample warranted DSMIII diagnoses of Antisocial Personality Disorder. Having been referred to psychological services, the present sample of inmates may have been more psychologically distressed than the general prison population; their mean score on the Beck Depression Inventory placed them in the moderately depressed range, whereas the Ontario prison sample studied by Zamble, Porporino and Kalotay (1984) in a study of coping behaviours had a mean score in the mildly depressed range. The proportion of subjects who reported suicide attempts does not seem to be markedly different from reports in other studies. Alessi et al (1984) found that 61% of a sample of young offenders had attempted suicide in the previous year. Pattison and Kahan (1983) reported that upwards of 40% of antisocial individuals in institutional settings engage in deliberate self-harm. Toch (1975) reported that 31.7% of the inmates in a prison mental hospital had self-injured while in prison. Correctional Services Canada (1981) reported that British Columbian

prisoners in segregation self-mutilated at the rate of 67,600 per 100,000 inmate years, and that estimates of self-injury generally tend to be conservative.

While a fairly large number of the inmates consecutively referred to psychological services were not included in the study, only a small number actually refused to participate. In the majority of cases, prison routines, court procedures and transfers prevented participation in the study. As participation was purely voluntary and prison records were not accessible, there is no way of knowing how those inmates may have differed from the inmates included in the study. Prisoners on remand status who were currently involved in court procedures may have been under extra levels of stress, while inmates unavailable because of institutional work responsibilities may have represented a better-adjusted element in the sample. Inmates who were transferred may have represented more serious offenders, or may have been from a more rural population. It is difficult to speculate how such inmates could have affected the results by their presence or absence in the study.

Aside from including data on parasuicide methods and parasuicides in and out of prison, it would be useful to examine levels of impulsivity, anxiety and hostility. Farmer (1987) has described the usefulness of distinguishing between intropunitive and extrapunitive hostility and their differential relationship with

depression and suicidal behaviour. Future research should examine the role of cognitive factors as they relate to problem-solving ability and coping strategies (Neuringer, 1976). New and better measures and predictors of suicide risk need to be developed, perhaps using linear structural equation modelling techniques (Cole, 1988). Factor analyses and item analyses of current test instruments should be conducted to refine a pool of variables that would be suitable for use in a follow-up study. Given the apparent unreliability of the discriminant function analysis results, the results of other data reduction techniques (i.e. factor structures) might also prove to be unstable.

There is no guarantee that variables which differentiate between parasuicide types retrospectively will have any utility in predicting future behaviour. The present results suggest that standard assessment measures can yield findings that are congruent with data and theories about parasuicide that have been derived from the general population. These measures may, or may not, have prospective validity, which can only be assessed in a longitudinal, prospective design. Groups similar to those used in the present study could be followed up, after suitable intervals, to determine the incidence of parasuicide and suicide. Without the benefit of empirical criteria for variable selection, those measures which showed consistency with positive findings in the general population

would represent a reasonable selection for inclusion, in a "first approximation" sense. With satisfactory cross-validation, the present research could represent a preliminary step towards Denoon's (1983) proposed development of a screening instrument. Without additional research, such an attempt would be premature.

CONCLUSIONS

Although prison inmates would seem to represent a high risk group for suicide in general, there seems to be some convergent validity in classifying inmates according to their self-reports of previous parasuicidal behaviours. Inmates reporting parasuicide associated with a wish to die differed significantly from inmates with no histories of parasuicide on a number of measures related to suicidal intentions and psychological adjustment, notably the Beck Depression Inventory, the Reasons for Living Inventory, and the Suicide Probability Scale. While there were minimal differences between serious attempters and non-serious attempters on direct comparison, the non-serious attempters were differentiated from the comparison group by a slightly different pattern of differences at various levels of significance. The most notable differences were in terms of attitude towards future suicide, ratings of coping ability, negative self-evaluation, social desirability, and chemical abuse. Inmates with histories of deliberate self-harm, or

self-mutilation, did not differ greatly from the comparison group with no history of parasuicide. The degree to which similarly derived groups might be differentiated in another sample is unclear. Knowledge of an inmate's parasuicidal history may have some utility as a marker for identifying individuals with poor coping ability and poor psychological adjustment in terms of depression, self-devaluation and disenchantment with living, which are all factors associated with an increased risk for subsequent parasuicide or suicide. While the present results show some limited support for ascribing certain characteristics to groups of inmates who have engaged in parasuicide, they do not address the issue of whether such characteristics can be used to predict future suicidal behaviour in prison. Whether the measures used in the present study have prospective validity can only be determined in a prospective study. In relation to proposals for the development of routine screening questionnaires, substantial work needs to be done in terms of constructing and validating such instruments using appropriate predictors and criterion measures. The current results have limited generalizability to the degree to which participation in confidential, anonymous research has implications that differ from completing questionnaires involving self-disclosure that will be used for administrative purposes.

The issue of valid self-disclosure and social

desirability effects is explored in a secondary study attached to this report: Study II.

STUDY II

INTRODUCTION

The present study presents an opportunity to examine the controversy over the relationships between hopelessness, social desirability and suicidal behaviours (Linehan and Nielsen, 1981, 1983; Nevid, 1983; Strosahl, Linehan and Chiles, 1984). The possibility that self-report measures used in the assessment of suicide may lack validity because they are confounded by social desirability effects is of great importance to researchers and clinicians.

In their review of the issues, McCrae and Costa (1983) note two applications of the term "social desirability" (SD). In the first, SD is seen as a property of test items or scales which elicit a tendency, or response-style bias, towards distorting self-report responses in a socially desirable direction. In the second application, SD is seen as an individual-difference variable, reflecting the tendency for a specific individual to be more or less responsive to the SD characteristics of test items (McCrae and Costa, 1983). Thus, subjects high in SD may consciously, or unconsciously, present themselves in a more favorable light than is otherwise warranted. Low SD subjects will give a more accurate representation of themselves (McCrae

and Costa, 1983).

In research which relies exclusively upon self-report measure and questionnaires, the presence of a confounding social desirability effect could render the results uninterpretable. The potential seriousness of the problem is compounded when one considers the nature of the research subjects. A priori, prison inmates seem less trustworthy, and one wonders whether their self-reports may be taken at face value.

A number of scales have been developed to measure individual differences in social desirability, including those by Edwards (1957) and Crowne and Marlowe (1964). In general, scores on these measures reflect the incidence with which a subject endorses socially desirable or undesirable items. However, as noted by McCrae and Costa (1983), individuals who are, in fact, highly conscientious, well-adjusted and cooperative would appear to be high in SD, and their legitimate responses would be cast under suspicion.

The most recent version of the controversy surrounding the social desirability effect centers around the utility and validity of the Hopelessness Scale (HS), developed by Beck, Weissman, Lester and Trexler (1974). A number of studies have suggested that the HS represents an objective measure of hopelessness, or pessimistic, negative expectations about oneself and the future, and

that this variable represents a "missing link" between depression and suicide, in that it is a better predictor of suicidal intent than measures of level of depression (Beck, Kovacs, and Weissman, 1975; Dyer and Kreitman, 1984).

Recently several authors have questioned the validity of the HS, suggesting that it is confounded by a social desirability response bias. Fogg and Gaytor (1976) and Linehan and Nielsen (1981, 1983) have reported finding substantive negative correlations between HS scores and scores on the Edwards Social Desirability Scale (Edwards, 1957).

Linehan and Nielsen (1981, 1983) also reported that the relationship between hopelessness and self-reports of suicidal behaviour is lost, or substantially reduced when social desirability scores are controlled statistically. The authors recommended that HS scores be interpreted with caution, in that a low score may be more indicative of the patient's response style than an absence of feelings of hopelessness.

Petrie and Chamberlain (1983) were unable to replicate the Linehan and Nielsen (1981, 1983) findings using a clinical sample. They used a different measure of social desirability, the Crowne-Marlowe Social Desirability Scale (Crowne and Marlowe, 1964).

There are good reasons to suspect that differences

between the two SD scales may be responsible for the conflicting findings reported: Crino, Svoboda, Rubenfeld and White (1983) noted that the degree of covariation between the two social desirability scales is quite small. The Edwards scale is said to be confounded with psychopathological content (Crowne and Marlowe, 1964), and the two scales have been shown to be factorially independent (Crino et al, 1983).

Nevid (1983) has suggested that the covariation between the hopelessness scale and the Edwards scale could represent measurement of a common construct or personality trait. To the extent that the Edwards scale is confounded with psychopathology, Nevid's (1983) explanation may have some validity. If the Crowne-Marlowe scale is independent of psychopathology, as claimed by Crowne and Marlowe (1964), one would expect no such confounding relationship.

Petrie and Chamberlain (1983) suggested that their replication failure was a result of differences in the populations sampled (general versus clinical), while Strosahl, Linehan, and Chiles (1984) discounted that explanation, suggesting that the Crowne-Marlowe scale is somewhat of an "imposter", representing conscious impression management, not social desirability.

The present study offers a dual-replication opportunity to directly compare the effects of the Edwards SD scale and the Crowne-Marlowe SD scale on the

relationship between hopelessness and suicidal behaviours, within a single sample of subjects. Thus, correlations and partial correlations are computed and compared with the results of Linehan (1981) and Petrie and Chamberlain (1983), with the expectation that the Crowne-Marlowe SD scale would show less of an effect than the Edwards SD scale.

Style Versus Substance, and Predictive Validity

Granting the possibility of a social desirability effect, questions arise as to its meaning, with regards to the validity of potentially "contaminated" clinical instruments.

Linehan and Nielsen (1981, 1983) argue that the demonstrated effects of partialling out social desirability variance support an interpretation that the Hopelessness Scale is hopelessly confounded by response-style bias. Nevid (1983) notes that the relationship between social desirability and hopelessness could be predicted theoretically, in that people who feel hopeless would tend to be less concerned with the social impressions the leave about themselves, and they would thus tend to score lower on measures of social desirability.

Nevid (1983) and McCrae and Costa (1983) share a perception of social desirability as a measure of psychological adjustment that exerts its influence because

of "shared substantive variance" with constructs such as hopelessness. Even Strosahl, Linehan and Chiles (1984) are willing to admit that:

> ...Because there is a well-discussed and clinically meaningful relationship between SD and general psychological adjustment...one would predict a decrease in the absolute magnitude of the correlation between the BHS and any suicidal criterion with SD partialled out, since the BHS and SD share common variance related to general adjustment.(p.451)

Along with the results of their own study, McCrae and Costa (1984) cite a considerable body of literature that suggests that measures of social desirability should not be used to assess the validity of substantive scales, nor to correct scores for individuals. Nevertheless, Linehan and Nielsen (1983) assert that, while these are reasonable hypotheses, it is equally likely that their original interpretation of the results is true: hopelessness scores should be interpreted with caution because of the potential confound, and SD assessment is crucial to the accurate prediction of suicidal behaviour.

Strosahl et al (1984) state that SD assessment may be useful under two conditions. In the first, SD functions as a suppressor variable, being only moderately related to the suicide criterion, but strongly represented within the independent predictors, such as hopelessness. According to their notion of suppressor variables, this results in spuriously elevated multiple correlations and predictive validity coefficients, as in when hopelessness is

correlated with some index of suicidal behaviour. They state that previous studies of hopelessness are subject to reinterpretation because of the failure to control the confounding influence of SD response set variance represented in self-report predictors. The value of SD assessment is to adjust scores to provide a more accurate representation of the respondent's "true score" on the helplessness dimension (p.452).

Hedging their bets, Strosahl et al (1984) state that SD assessment may also be useful when substantial prediction variance is accounted for because SD is, in fact, significantly correlated with suicidal behaviour criteria, and prediction accuracy will improve where SD is strongly associated with general psychological adjustment.

They then present re-analyzed data from the Linehan and Nielsen (1981, 1983) studies, which purportedly show the clinical utility of SD assessment under certain conditions, and proceed to use their results to imply support for their response style interpretation of the SD effect.

The position taken here is that their study lacks internal validity, and their conclusions exceed their results. Unfortunately, a rather detailed critique is necessary to demonstrate these points.

Critique of Strosahl, Linehan and Chiles (1984)

Strosahl, Linehan and Chiles (1984) utilized

discriminant function analysis to classify subjects on three criteria of suicidal behaviours: historical reports of ideation and suicide attempts, reports of frequency of suicidal ideation in the past year, and self-estimates of future likelihood of suicide. The three predictors were, in varying combinations: Hopelessness Scale, Beck Depression Inventory, and Edwards SD scale. Results using the scales individually were compared with results using either hopelessness or depression in conjunction with the Edwards scale. The intent was to demonstrate that the combined use of the SD scale with the others would result in improved classification accuracy, with special attention to false-negatives.

For historical reports, subjects were classified into four groups: never suicidal, mildly suicidal, seriously suicidal, and past parasuicides. For recent ideation, three groups were used: not suicidal, mildly suicidal and seriously suicidal. For future likelihood, four groups were used: no chance, low chance, moderate chance, and high probability. This design was used for two samples: general population (shoppers in a mall, n=197), and a psychiatric sample (n=96). Table 1B presents their results for the general population sample, and Table 2B presents their results for the psychiatric sample. The key figures in the tables are the "unique" false-negative rates (using individual variables), and the "combined"

TABLE 1B
PREDICTION OF SUICIDE RISK INDEXES
IN A GENERAL POPULATION SAMPLE
(Strosahl, Linehan and Chiles, 1984)

CRITERIA	r	PERCENT UNIQUE TRUE POSITIVE	PERCENT UNIQUE FALSE NEGATIVE	PERCENT COMBINED TRUE POSITIVE	PERCENT COMBINED FALSE NEGATIVE
Past Behaviour (n-197)					
Hopelessness	.26	40.6	94.4	46.9*	94.4
SD	-.27	43.4	94.4		
Recent Suicide Ideation (n=182)					
Hopelessness	.39	35.4	72.0	58.8*	66.0*
SD	-.45	64.7	77.7		
Likelihood of Future Suicide (n=72)					
Hopelessness	.43	69.4	50.0	75.0*	50.0
SD	-.39	73.6	75.0		

SD = Edwards Social Desirability Scale

* = improved classification accuracy

TABLE 2B

PREDICTION OF SUICIDE RISK INDEXES
IN A PSYCHIATRIC SAMPLE
(Strosahl, Linehan and Chiles, 1984)

CRITERIA	r	PERCENT UNIQUE TRUE POSITIVE	PERCENT UNIQUE FALSE NEGATIVE	PERCENT COMBINED TRUE POSITIVE	PERCENT COMBINED FALSE NEGATIVE
Past Behaviour					
Hopelessness	.35	42.7	100.0	47.0*	74.1*
SD	-.34	37.5	96.2		
Depression	.34	43.8	100.0	46.8*	59.3*
Recent Suicide Ideation					
Hopelessness	.61	53.9	35.3	65.3*	35.3
SD	-.57	54.1	41.5		
Depression					
Likelihood of Future Suicide					
Hopelessness	.72	61.5	20.0	61.5	35.0
SD	-.33	38.6	75.0		
Depression	.62	56.3	24.0	60.4*	52.0

Note: (n=96); SD = Social Desirability.

* - improved classification accuracy with combination.

false-negative rates (combining SD scores with each variable).

One of the problems is that cell frequencies and marginal totals are not provided, depriving us of information about true-negatives and false-positives. We do not know which categories subjects were misclassified into. The term "true positives" is used to describe data that apparently represents overall hit-rates, or total percentage of subjects correctly classified.

The problem with terminology and cell proportions is salient in Table 2B, for the past behaviour criterion, using hopelessness as the sole predictor (actually it is a postdictor). The table states a rather dubious result of 100% false-negatives, yet suggests that the true positive rate was 42.7%, which could only refer to the overall hit-rate, which therefore includes true negatives. It is rather startling to see that not a single past attempter was correctly identified, in view of the well-confirmed relationship between hopelessness and suicidal behaviour (Beck, Kovacs and Weissman, 1979). This result should have been discussed, instead of being passed off as evidence of the Hopelessness Scale's inefficiency.

Combining hopelessness with SD resulted in a reduction of false-negatives in only two of the six analyses presented, and one of those relied upon the implausible false-negative rate of 100%. The other was

for recent ideation, in Table 1B, showing a reduction from 72% for hopelessness alone, to 66% for the combined postdictors. The tables show identical unique and combined false-negative rates for three other analyses, and for future likelihood. In Table 2B, the combined rate of 36% was actually higher than the 20% for hopelessness by itself. This 20% rate for hopelessness was the lowest rate of false-negatives in the study, contradicting statements in their discussion that the depression/sD combination had the lowest false-negative rate for the entire study, using any criterion.

Strosahl, Linehan and Chiles (1984) concluded that SD may function in psychiatric populations in the manner originally described by psychometric theorists, such that high SD scorers "may reorganize their data to the point that the clinician may be seriously misled.", and therefore clinicians should "...interpret self-reported estimates of hopelessness and depression scores cautiously in formulating a suicide risk assessment, with special focus on avoiding false negative prediction." (p.456).

While it is certainly good advice to avoid false-negative predictions, the results presented were hardly impressive, nor conclusive, and should not be seen as evidence that subjects minimized their hopelessness, or that SD assessment corrected their scores, thereby decreasing the number of false-negatives. The results did

generally indicate some improvement in overall hit-rates, for the general population sample, but only for two of the three analyses in the psychiatric sample. The authors presented no explanation as to why SD should have been so ineffectual in postdicting the future likelihood scores. It is difficult to see why the SD effect should vary according to the time frame being examined, unless SD shares more variance with past suicide attempts than it does with attitudes about future suicide. One would expect SD, if it reflects response est, to have more in common with an attitude than it does with the commission of a suicide attempt unless it reflects a personality trait pertinent to trying to kill oneself.

The results do not support Strosahl, Linehan and Chile's (1984) conceptualization of SD as a suppressor variable. They stated that, as a suppressor variable, SD should have only a "modest" correlation with the criterion. The fact is, the higher the correlation was between SD and the criterion, the more impressive were the results for the combined analyses. The best result was obtained for recent ideation, where the correlation was a healthy -.45. Furthermore, a suppressor variable is supposed to increase the predictive validity of another variable when it is entered into an equation (controlled for), by suppressing "noise", or error variance (Nie, Hull, Jenkins, Steinbrenner and Bent, 1975; Farberow and

MacKinnon, 1976). The emphasis is upon revealing a "masked" relationship, rather than decreasing a relationship. The same data has been already used by Linehan and Nielsen (1981, 1983) to show that SD reduced the covariance between hopelessness and suicide behaviours. Using only two postdictors, one could not expect SD to improve accuracy unless it contributed some unique variance to the equation; there was nothing in the equation for it to "suppress".

By emphasizing response-style bias, Strosahl et al (1984) are unable to see that their data actually support a "shared substantive variance" interpretation of the SD effect. The focus of "catching" high SD responders who are masking their true hopelessness levels obscures the nature of the high negative correlations between SD and measures of maladjustment. Low SD responders may be maladjusted individuals who are truthfully reporting symptoms of psychopathology, and negative correlations are obtained, not via the aftifact of high SD responders minimizing their scores, but because low SD scorers score so highly on other measures of psychopathology. If SD assessment improves accuracy, it becomes important to ask how it manages to do so; whether by adjusting hopelessness scores upwards, or whether by identifying low SD scorers who are maladjusted.

To answer the above question, it was decided to

attempt to replicate the Strosahl, Linehan and Chiles (1984) study, and then compare subjects identified as past attempters by using hopelessness scores alone, with subjects identified as past attempters using hopelessness and SD combined. From a response-style bias perspective, one would expect the Combined SD approach to identify subjects with high SD scores, who needed their hopelessness scores adjusted upwards. From a shared substantive variance viewpoint, the Combined SD subjects should have relatively lower SD scores than those selected by hopelessness alone.

Strosahl, Linehan and Chiles (1984) query which construct, social desirability or hopelessness, is in the theoretically preeminent position. Multiple regression analyses will be conducted on the data from the present study in order to determine whether hopelessness has any theoretical meaning (variance) unaccounted for by social desirability. Multiple regression techniques are also used to examine the issue of whether there is any unique variance associated with SD response set that is separate from reports of psychological adjustment. From a response style bias model, one would expect measures of psychological adjustment to account for a minimal amount of variance in SD scores, and one might expect variance in hopelessness scores to be accounted for mainly by social desirability. From a shared substantive variance model,

one would expect measures of psychological adjustment to account for considerable variance in SD scores, while SD would be expected to be but one of a number of variables accounting for variance in hopelessness scores.

To test the suppressor status of social desirability, it was decided to conduct discriminant function analyses with a large pool of variables, examining the effects of having SD scores in, and out, of the equations. As a suppressor variable, one would expect the presence of SD to increase the coefficients of other variables in the equation.

METHOD

Subjects, instruments and procedures have already been described in Study I.

RESULTS

In an attempt to replicate the findings of Linehan and Nielsen (1981, 1983) and Petrie and Chamberlain (1983), intercorrelations were calculated for scores on the Hopelessness scale, Beck Depression Inventory, Edwards SD Scale, Crowne-Marlowe SD Scale, history of suicide attempts, and self-estimated likelihood of future suicide.

Subsequently, partial correlations of hopelessness scores with history of attempt and future likelihood of suicide were calculated, controlling consecutively for scores on the Edwards SD scale, and scores on the Crowne-Marlowe SD scale.

Table 3B shows the intercorrelations obtained between the various measures, which were all significant beyond the .05 level, at a mininum, with most significant beyond the .01 level. Hopelessness showed its highest correlation (.57) with scores on the Beck Depression Inventory, closely followed (-.50) by the Edwards SD scale. Its lowest correlation was with the Crowne-Marlowe SD scale (-.21). Hopelessness had a higher correlation with estimates of chance of future suicide (.43), than it did with history of attempts (.23).

Scores on the Edwards Social Desirability scale had moderately high negative correlations with hopelessness (-.50), depression (-.66), history of attempts (-44), and chance of future suicide (-.40), with moderately positive correlation with scores on the Crowne-Marlowe SD scale.

Scores on the Crowne-Marlowe SD scale showed more modest correlations with the other variables, ranging from -.16 with history of attempts, to -.21 with hopelessness. Interestingly, history of attempts had its highest correlation with Edwards SD scores (-.44), while chance of future suicide showed its greatest correlation with

TABLE 3B

ZERO-ORDER CORRELATIONS FOR HOPELESSNESS, DEPRESSION, SOCIAL DESIRABILITY SCALES, AND SUICIDAL BEHAVIOURS.

(n=109)

VARIABLE	HPS	BDI	EDSD	CROWNE	ATTEMPT	CHANCE
HPS		.57	-.50	-.21	.23	.43
BDI	.57		-.66	-.17	.41	.49
EDSD	-.50	-.66		.36	-.44	-.40
CROWNE	-.21	-.17	.36		-.16	-.16
ATTEMPT	.23	.41	-.44	-.16		.34
CHANCE	.43	.49	-.40	-.16	.34	

HPS: Hopelessness Scale
BDI: Beck Depression Inventory
EDSD: Edwards Social Desirability
CROWNE: Crowne-Marlowe Scale of Social Desirability
ATTEMPT: History of suicide attempts
CHANCE: Self-estimated likelihood of future suicide.

All correlations were significant beyond the .05 level; correlations above .21 were significant beyond .01 level.

depression (.49).

Partial correlations, controlling for Edwards SD scores and Crowne-Marlowe SD scores separately, were computed for hopelessness with history of attempts and chance of future suicide. The results, contrasted with those found in previous studies, are presented in Table 4B. The results of the present study are more similar to those of Linehan and Neilsen (1981), than those of Petrie and Chamberlain (1983). Correlations with hopelessness were markedly reduced when Edwards SD scores were partialled out, falling from .23 to .00 for history of attempts, and from .43 to .29 for chance of future suicide. Partialling out Crowne-Marlowe SD scores made only a trivial reduction in the respective correlations: .23 to .19, and .43 to .40. Petrie and Chamberlain (1983) found that controlling for Crowne-Marlowe scores actually caused the correlation with history of attempts to increase slightly, from .43 to .47.

Interestingly, the status of hopelessness as a mediating factor in the relationship between depression and suicidal behaviour (Beck, Kovacs and Weissman, 1975) was not confirmed by the results in this study. Scores on the Beck Depression Inventory (BDI) correlated .41 with history of attempts, .60 with frequency of suicidal ideation in the past year, and .49 with self-reported likelihood of a future attempt (chance), all significant

TABLE 4B

CROSS-STUDY COMPARISONS OF EFFECTS OF CONTROLLING FOR SOCIAL DESIRABILITY ON HOPELESSNESS CORRELATIONS.

STUDY	Hopelessness/ ATTEMPT	Control EDSD	Control CROWNE
LINEHAN and NIELSEN (1981) (N=180)	.26	.12*	no data
PETRIE and CHAMBERLAIN (1983) (N=54)	.43	no data	.47
PRESENT STUDY (n=109)	.23	.00*	.19

	Hopelessness/ CHANCE	Control EDSD	Control CROWNE
LINEHAN and NIELSEN (1981) (N=180)	.36	.26	no data
PRESENT STUDY (n=109)	.43	.29	.40

EDSD: Edwards Social Desirability Scale
CROWNE: Crowne-Marlowe Social Desirability scale
ATTEMPT: History of suicide attempts
CHANCE: Self-estimates of future suicide.
* = not significant at .05 level.

beyond the .001 level. Controlling for hopelessness scores, the respective partial correlations were: .35, .48, and .33, all significant beyond the .001 level. Conversely, the relationship between hopelessness (HPST) and suicidal behaviours was markedly reduced when depression scores were partialled out: history of attempts, .23 vs. -.02; ideation in past year, .41 vs. .09; likelihood of future attempt, .43 vs. .21. The only partial correlation which remained significant was for future likelihood (p=.01); partialling out depression scores affected the hopelessness/suicidal behaviour relationship more than the depression/suicidal behaviour relationship was affected by controlling for hopelessness.

Replication Results: Strosahl, Linehan and Chiles (1984)

The procedures followed by Strosahl, Linehan and Chiles (1984) were duplicated in the present study. Discriminant function analyses were conducted to separate and classify subjects according to three suicidal behaviour criteria: past behaviours, recent suicidal ideation, and self-estimated chance of future suicide. Individual analyses were conducted for each of the three postdictors: hopelessness, social desirability (Edwards) and depression. Additional analyses were conducted combining hopelessness with social desirability (SD), and depresson with social desirability (SD), as the set of

postdictors. Classification results were then compared with those for the individual scales, in order to assess improvements in classification accuracy using the combined sets of variables. As the main focus of the present study is on the relationship between hopelessness and SD, the emphasis will be on the results using these two variables, although data on depression are included in the relevant table.

Table 5B presents the classification results for the postdictors individually and in combination. With regards to recent suicide ideation and future likelihood of suicide, the results were similar in pattern to those of Strosahl, Linehan and Chiles (1984), but slightly superior.

TABLE 5B

REPLICATION OF STROSAHL, LINEHAN AND CHILES (1984): POSTDICTION OF SUICIDE RISK INDEXES IN A CORRECTIONAL SAMPLE

CRITERIA NEGATIVE	r	PERCENT UNIQUE OVERALL HIT-RATE	PERCENT UNIQUE FALSE NEGATIVE	PERCENT COMBINED OVERALL HIT-RATE	PERCENT COMBINED FALSE NEGATIVE
PAST BEHAVIOUR					
Hopelessness	.23	40.2	26.7	46.5 *	28.8
SD	-.44	44.8	26.7		
Depression	.41	43.3	28.9	43.3	35.6
RECENT SUICIDE IDEATION					
Hopelessness	.41	54.3	74.0	57.5 *	44.4 *
SD	-.58	55.1	40.7		
Depression	.60	59.1	55.5	59.1	40.7 *
LIKELIHOOD OF FUTURE SUICIDE					
Hopelessness	.43	75.0	50.0	74.0	48.9 *
SD	-.40	69.3	60.0		
Depression	.49	72.7	56.5	72.4	53.3

* = improved classification accuracy.
SD: Edwards Social Desirability Scale.

For recent suicide ideation, SD assessment combined with hopelessness reduced false negatives from 74% to 44.4%, compared to using hopelessness by itself. Overall hit-rate increased from 54.3% to 57.5%. For likelihood of future suicide, SD assessment combined with hopelessness reduced the level of false negatives from 50% to 48.9%, in comparison to hopelessness as the sole postdictor. The overall hit-rate dropped from 75% to 74%.

The pattern for depression, as a postdictor, was basically similar to that for hopelessness across all of the analyses, in terms of the SD effect.

The results of the criterion of past behaviour diverge markedly from those presented by Strosahl, Linehan and Chiles (1984). The overall hit-rates for past behaviour were very similar to those for the previous study, with SD combined with hopelessness showing an improvement from 40.2% to 46.5%, compared to hopelessness by itself. However, a striking difference emerged with regards to false negative rates. Strosahl et al (1984) found false negative rates for hopelessness (by itself) of 94.4% and 100%, for their two samples. In the present study, hopelessness, by itself, produced a false negative of 26.7%, while in combination with SD the rate of false negatives was 28.8%.

Table 6B presents the replication classification results on past behaviour, for the hopelessness postdictor, and for the "SD combined with hopelessness" postdictors. It

TABLE 6B

REPLICATION OF STROSAHL, LINEHAN AND CHILES (1984): CLASSIFICATION RESULTS FOR HOPELESSNESS AND SD-COMBINED ANALYSES, CELL FREQUENCIES (PAST BEHAVIOUR)

HOPELESSNESS RESULTS

ACTUAL GROUP		NO. CASES	PREDICTED GROUP MEMBERSHIP 0	1	2	3
NEVER	0	32	18 56.3%	0	0	14 43.8%
MILDLY SUICIDAL	1	27	15 55.6%	0	0	12 44.4%
SERIOUS IDEATION	2	23	8 34.8%	0	0	15 62.2%
PAST ATTEMPTER	3	45	12 26.7%	0	0	33 73.3%

PERCENT CORRECTLY CLASSIFIED: 40.16%

SD COMBINED RESULTS

ACTUAL GROUP		NO. CASES	PREDICTED GROUP MEMBERSHIP 0	1	2	3
NEVER	0	32	23 71.9%	0	0	9 28.1%
MILDLY SUICIDAL	1	27	12 44.4%	4 14.8%	0	11 40.7%
SERIOUS IDEATION	2	23	7 30.4%	1 4.3%	0	15 65.2%
PAST ATTEMPTER	3	45	11 24.4%	2 4.4%	0	32 71.1%

PERCENT CORRECTLY CLASSIFIED: 46.46%
(n = 127)

can be seen from the table that the SD with hopelessness combination correctly classified one less actual past-attempter, but correctly classified five more subjects in the "never suicidal" group.

It should also be noted that hopelessness, by itself, was unable to make any postdictions about membership in the mid-range groups (1,2). The combination of SD with hopelessness made seven postdictions of Group 1 membership (mildly suicidal), and was correct on four of them. This outcome points out the inherent difficulty in using only two variables to predict membership across four categories. As Strosahl, Linehan and Chiles (1984) did not provide comparable information, it cannot be determined if the same problem occurred in their study.

Summarizing the replication results, combining SD assessment with hopelessness or depression scores failed to improve overall hit-rates in four of the six analyses, while false negative rates (representing misclassified subjects belonging to the most serious categories) were reduced in four of the six analyses. Thus, while the SD combination has at least a minimal effect on false negative rates, it does not appear to be affecting false positive rates, which Strosahl, Linehan and Chiles (1984) suggested it should do, by reducing "spurious" correlations. Spuriously high correlations between postdictors and criterion variables should have been reduced, leading to fewer subjects being

misclassified as being suicidal (false positives). It is clear that this did not happen, because overall classification accuracy did not go up, despite fewer false negatives, when SD assessment was included.

Comparison Of Subjects Identified As Past Attempters

The results to this point do not provide any information as to how combining SD assessment might have led to fewer false negatives. By examining classification results for individual subjects, it was possible to compare subjects identified as past attempters by the SD combination (but not by the hopelessness postdictor) with subjects identified as past attempters by the hopelessness postdictor (but not by the SD combination). The focus was upon subjects classified differently by the two approaches.

There were 17 subjects for whom the hopelessness postdictor made a unique classification as a past attempter. Only four of them turned out to actually be past attempters. There were 10 subjects for whom the SD combination made unique classifications as past attempters; only three of them actually were past attempters.

The two groups of subjects, "SD Combined Attempters" and "Hopelessness Attempters", were compared on their scores for the Hopelessness Scale, the Edwards SD Scale, the Beck Depression Inventory, and the Suicide Probability Scale (SPS). From the response style bias perspective, SD combined attempters should have been selected on the basis

of high SD scores with low hopelessness scores that required "correction" upwards.

From a shared substantive variance model, SD Combined Attempters should have been selected by virtue of low SD scores, which would be associated with high scores on other measures of psychological adjustment, such as the Beck Depression Inventory (BDI) and the Suicide Probability Scale (SPS).

The results of the comparisons are presented in Table 7B, which shows the means and standard deviations for the two groups of "attempters" on the four comparison variables. As expected, the SD combined group had much lower hopelessness scores than the Hopelessness group (2.20 versus 6.47; $t(25)=3.40, p<.005$). However, the SD Combined group also had significantly lower scores on the Edwards SD scale, and significantly higher scores on the BDI and the SPS (SD: 19.50 vs. 31.65, $t(25)=7.84$, $p<.0001$; BDI: 20.00 vs. 11.38, $t(25)=3.03$, $p<.007$; SPS: 74.70 vs. 56.00, $t(25)=2.73$, $p=.05$). Thus, compared to the Hopelessness postdicted "attempters", the SD Combined group appear to be much less hopeless and less affected by social desirability, while being considerably more depressed (moderate range) and slightly more at risk for suicide, as measured by the SPS.

TABLE 7B

COMPARISON OF SD COMBINED VERSUS HOPELESSNESS ATTEMPTERS: MEANS AND STANDARD DEVIATIONS ON SELECTED VARIABLES.

VARIABLE	SD COMBINED ATTEMPTERS (N-10) mean/s.d.	HOPELESSNESS ATTEMPTERS (N=17) mean/s.d.
Hopelessness	2.20 (.92)	6.47 ** (3.85)
Edwards SD	19.50 (5.28)	31.65 *** (2.83)
Depression (BDI)	20.00 (5.66)	11.88 ** (7.24)
Suicide Probability Scale (SPS)	74.70 (14.20)	56.00 * (11.70)

* Significant beyond .05
** Significant beyond .01
*** Significant beyond .001

SD As A Suppressor: Discriminant and Regression Analyses.

The Strosahl et al (1984) argument rests heavily on the SD effect vis a vis the hopelessness construct. As noted earlier, there was little for SD to suppress in the study replicated here. Thus, the suppressor function and classification utility of the Edwards SD Scale were examined using discriminant function analyses with more than two postdictors. Variables known to be related to suicidal behaviour were added to hopelessness one at a time in separate discrimant function analyses using past attempt behaviour as the criterion: Depression (BDI), Hostility (SPS), Chemical Abuse (CPS), Antisocial Tendencies (CPS), Thought Disturbance (CPS). Subjects were grouped as attempters or non-attempters, using the SBQ criteria described in Study I. For each combination of variables with the hopelessness measure, separate analyses were conducted with the Edwards SD scale in and out of the equations. All of the variables were entered simultaneously, using the direct method. Edwards SD analyses were compared in terms of canonical correlations, percentage of total classification accuracy, percentage of false negatives, and percentage of false positives. In addition, equivalent multiple regressions were conducted to obtain the adjusted R-Squares and Beta weights with and without SD included. The same procedures were followed using a different criterion: subjects who reported more

TABLE 8B

THE EFFECTS OF THE EDWARDS SD SCALE UPON CLASSIFICATION ACCURACY AND REGRESSION WEIGHTS WITH A PARASUICIDE CRITERION.

VARS USED	Beta Wt.	Beta EDSDS inc.		Adjusted R-Square	Canon Corr.	%tot. Hits	%false negs	%false pos.
HP	.043	.040		.179	.438	72.6	57.7	5.6
BD	.320	.300						
HY	-.040	-.070						
CH	.210	.200						
AP	.030	.027						
TD	.025	-.050						
		-.156	EDSD =	.182	.445	74.2	53.8	5.6
HP	.044	.040		.186	.434	71.0	61.5	5.6
BD	.340	.270						
HY	-.033	-.070						
CH	.210	.190						
AP	.023	.038						
		-.133	EDSD =	.188	.436	71.0	61.5	5.6
HP	.047	.045		.192	.433	71.0	61.5	5.6
BD	.340	.280						
HY	-.031	-.070						
CH	.225	.210						
		-.127	EDSD =	.193	.435	71.0	61.5	5.6
HP	.072	.066		.158	.341	67.7	69.2	6.4
BD	.343	.267						
HY	.056	-.003						
		-.168	EDSD =	.165	.362	67.7	57.7	13.9
HP	.088	.066		.163	.329	69.4	65.4	5.6
BD	.364	.267						
		-.167	EDSD =	.172	.361	69.4	57.7	11.1
HP	.293	.154		.078	.200	61.3	88.5	2.8
		-.302	EDSD =	.144	.347	67.7	61.5	11.1
EDSD		-.373		.132	.344	66.1	61.5	13.9

Note: HP - Hopelessness Scale; BD - Beck Depression Inventory; HY - Hostility Scale (SPS); CH - Chemical Abuse (CPS); AP - Antisocial Tendencies (CPS); TD - Thought Disturbance (CPS)

TABLE 9B

THE EFFECTS OF THE EDWARDS SD SCALE UPON CLASSIFICATION ACCURACY AND REGRESSION WEIGHTS (Criterion = Chance of Attempt)

VAR'S USED	Beta Wt.	Beta EDSD inc.		Adjusted R-Square	Canon Corr.	%tot. Hits	%false negs	%false negs
HP	.136	.135		.173	.442	79.0	75.0	8.0
BD	.372	.367						
HY	.059	.050						
CH.	.187	.187						
AP	.045	.044						
TD	-.266	-.284						
		-.034	EDSD =	.167	.442	79.0	75.0	8.0
HP	.128	.131		.151	.413	75.8	83.3	10.1
BD	.203	.242						
HY	.027	.054						
CH	.109	.124						
AP	.111	.102						
		.087	EDSD =	.148	.418	77.4	75.0	10.0
HP	.143	.145		.150	.413	75.8	83.3	10.0
BD	.211	.257						
HY	.033	.065						
CH	.160	.172						
		.102	EDSD	.148	.418	77.4	75.0	10.0
HP	.161	.163		.137	.411	74.2	83.3	12.0
BD	.213	.245						
HY	.096	.121						
		.069	EDSD =	.131	.418	77.4	75.0	10.0
HP.	.189	.192		.137	.369	77.4	75.0	10.0
BD	.249	.260						
		.019	EDSD =	.130	.369	75.8	75.0	12.0
HP	.329	.278		.101	.316	80.7	83.3	4.0
		-.111	EDSD =	.104	.346	75.8	91.7	8.0
		-.239	EDSD =	.049	.269	80.7	100.0	0.0

Note: HP = Hopelessness Scale
BD = Beck Depression Inventory
HY = Hostility Scale (SPS)
CH = Chemical Abuse (CPS)
AP = Antisocial Tendencies (CPS)
TD = Thought Disturbance (CPS)

than a moderate chance of a future suicide attempt, who also reported having a definite plan as to how they would kill themselves. This procedure differs slightly from the Strosahl et al (1984) study, which did not differentiate subjects according to the presence of a plan. The results of the comparisons are presented in Tables 8B and 9B.

Using the past parasuicide criterion, inclusion of the Edwards scale resulted in an increased canonical correlation in every analysis. The overall hit-rate went up in two of the analyses: the Hopelessness by itself analysis, and the analysis using all six variables. Hit-rates were the same in the other four analyses, the false negative rate was better in four of the six analyses using the Edwards scale, while the false positive rate was better in three analyses, and the same in the other three analyses. The Beta weights were decreased for the Hopelessness scale by SD inclusion in all six of the analyses, while the weights for depression and chemical abuse were also reduced in each analysis. The weights for hostility increased in three out of four analyses, and the weights for antisocial tendencies and thought disturbance were increased in one analysis each.

Results were similarly mixed for the Chance/Plan criterion. Overall hit-rates increased with SD in three analyses, decreased in two, and were the same in one. False negative rates improved in three analyses, were the same in two analyses, and were worse in one analysis. There was

improvement in false positive rates for only one analysis, while two were worse, and three were the same. However, the Beta weights for Hopelessness increased in four out of six analyses, while the Depression weights increased in four out of five analyses. The weights for Hostility and Chemical Abuse increased in the majority of comparisons. The only variable for which weights consistently decreased was Antisocial Tendencies. The results varied according to which combination of variables and which criterion were used. For example, the combination of Hopelessness, Depression and Hostility had their Beta weights decreased with SD when past behaviour was the criterion, while their weights all increased when the future attempt and plan criterion was used. Interestingly, the highest overall accuracy (80.7%) and the lowest rate of false positives (0%) was obtained by using the Edwards scale alone for the Chance/Plan criterion. However, these rates were obtained at the expense of a 100% false negative rate, as every subject was classified into the non-suicidal category. It should be noted that the results presented here represent cross-validation results, in that the samples were randomly divided into half, with the classification functions derived from the first sample being used to classify the "Hold-Out" second sample.

Multiple Regression Analyses

Multiple regression analyses were conducted using

Beck's Hopelessness Scale scores (HPST) and Edwards Social Desirability scores (EDSD) as the dependent variables. A pool of fifteen variables was used for each analysis, consisting of scores on the following measures: Beck Depression Inventory, Automatic Thoughts Questionnaire (ATQT), Crowne-Marlowe Social Desirability Scale, suicidal ideation in the past year, history of parasuicide (Attempt), future likelihood of parasuicide (Chance), self-rated ability to cope with negative life changes (Coperisk), positive beliefs about life and coping strategies (COPERFL), from the Reasons for Living Inventory), and subscales from the Carlson Psychological Survey: Thought Disturbance, Chemical Abuse, Antisocial Tendencies, Self Depreciation, Validity Subscale. Also included was the Hostility subscale of the Suicide Probability Scale (Cull and Gill, 1981). Hopelessness Scale scores and Edwards SD scores were also included in each other's regression analyses. All of the variables listed above have been described in earlier sections of this paper.

The multiple regression analyses were conducted using a stepwise method from the SPSS (X) program (SSPS Inc., 1983). Using Hopelessness scores (HPST) as the dependent variable, a significant Multiple R of .66 was obtained ($F(3,121) = 31.04$, $p. = .000$), with an Adjusted R-Square of .42. Only three variables were included in the final regression equation: Beck Depression Inventory score (Beta =.27),

Hostility score (Beta =.30), and positive beliefs about life and coping, COPERFL (Beta =-.28).

Scores on the Edwards SD scale were notably absent from the final equation, and their partial correlation with the criterion (HPST) was only -.004 when the regression procedure was terminated. Only 42% of the variance of hopelessness scores was accounted for in the multiple regression, and that variance was attributable to levels of depression, hostility, and beliefs about life and coping, rather than SD responding. Thus, hopelessness appears to have considerable variance (and theoretical meaning) unaccounted for by the pool of variables used in the regression analysis, including social desirability.

When Edwards SD scores were used as the dependent variable, a significant Multiple R of .82 was obtained ($F(3,121) = 79.97$, $p. = .000$), with an Adjusted R-Square of .66. Only three variables were retained in the final equation: Thought Disturbance (Beta = -.39), Hostility (Beta = -.25), and negative automatic thoughts, ATQT (Beta = -.30). Roughly 66% of the variance in SD scores is accounted for by the variables in the regression equation, leaving only 34% of variance that may be considered "unique...and separate from reports of general psychological adjustment" (Strosahl et al, 1984). The results seem to suggest that social desirability, as measured by the Edwards scale, shares more variance with the

measures of psychological adjustment examined here than does hopelessness, as measured by the Beck scale. Interestingly, both SD and hopelessness appear to share common variance with a measure of hostility.

DISCUSSION

The social desirability issue raised by Strosahl, Linehan and Chiles 1984) leads to important questions about the validity of suicide assessment, particularly within a prison population, where there are always questions about the validity of inmates' self-reports. The finding that scores on the Edwards scale of social desirability account for significant variance in the correlation between hopelessness and suicidal behaviours is one that needs careful interpretation.

The present study confirmed the results of Strosahl et al (1984): controlling for social desirability does markedly reduce correlations between hopelessness and various measures of suicidal behaviour. The effect was found for the Edwards scale, but not for the Crowne-Marlowe scale, and it was most noticeable for self-reports of past attempts, in which the partial correlation was essentially zero. The present results indicate that the failure of Petrie and Chamberlain (1983) to replicate the "confounding" social desirability effect found by Linehan and Nielsen (1981) was

due to their use of the Crowne-Marlowe scale, and not due to population differences. Similar replication findings have been recently reported by Cole (1988), using both clinical and non-clinical samples.

Strosahl, Linehan and Chiles (1984) attempted to support their response bias/suppressor variable interpretation of the social desirability (SD) effect, by presenting weak and inconclusive evidence that combining SD assessment with hopelessness assessment achieved improved classification accuracy over hopelessness assessment by itself. Their results were inconsistent, and marginal, depending upon which suicidal behaviours were examined, and whether one looked at overall hit-rates or false negative percentages.

The replication results presented here confirmed modest improvement in the postdiction of recent suicidal ideation, as well as the irrelevance of SD assessment to postdicting estimates of future likelihood of suicide, when hopelessness is the only other postdictor. With regards to past attempts, combining SD assessment improved overall postdiction accuracy by roughly 6%, but the number of past attempters correctly classified decreased by one subject. The false negative rate of 26.7% for hopelessness assessment by itself is strikingly lower than the rates of 94.4% and 100% reported for the two samples in Strosahl et al (1984). Such high rates are difficult to explain, and they diverge

so much from what would be expected merely by chance, that one is forced to consider the possibility of statistical artifact or procedural error. Their own results indicate a correlation of .26 between hopelessness and past behaviour, which is actually slightly higher than the correlation of .23 obtained in the present study. Logically, there has to be some cutting score which would allow the postdiction of at least one past attempter. The only reason for rejecting such a cutting score would be the creation of an overwhelmingly large number of false positives. In the present study, the Edwards scale produced a 100% false negative rate in classifying chance/plan subjects, because every subject was classified as non-suicidal, resulting in a 0% false positive rate. Strosahl et al (1984) do not provide sufficient data to determine if a similar situation occurred in their study. It is true that the present study had a higher proportion of past attempters (37% vs 28%), but the results should not have deviated that much.

In view of the repeatedly confirmed relationship between hopelessness and suicide attempts reported in the literature (Beck, Steer, Kovacs and Garrison, 1985; Dyer and Kreitman, 1984; Hawton, 1987), some sort of comment on such an apparently anomalous result should have been offered by Strosahl et al (1984). Such a result does not necessarily validate, nor support, their queries about the utility of hopelessness assessment. In fact, there are good reasons

why hopelessness should have weak postdictive value with regards to past suicidal behaviour, when the recency of those behaviours is not controlled for. As a measure of a current state, hopelessness cannot reasonably be expected to correlate strongly with events and actions that may have taken place in the remote past. It was quite clear in the present study, and in Strosahl et al (1984), that the correlations with hopelessness increased as one went from past behaviour to recent ideation to attitudes about future suicide. Nevertheless, in view of a modest, significant correlation one might reasonably expect hopelessness to differentiate at least one past attempter.

Analysis and comparison of the subjects classified differently by the hopelessness versus combined SD assessment procedures yielded interesting results with regards to subjects classified as past attempters.

From the Strosahl, Linehan and Chiles (1984) response-style bias perspective, combined SD assessment allows an adjustment, or correction, of hopelessness scores to their "true" level, by virtue of the negative correlation between SD and hopelessness. Since the concern expressed by Strosahl et al (1984) was that high SD subjects might be "masking" their true suicidal intent and hopelessness, it was expected that past attempters identified by the combined SD procedure would have high SD scores and low hopelessness scores, at least in comparison to past attempters identified

by hopelessness alone. The combined SD attempters did turn out to have lower hopelessness scores, but their SD scores were well below the mean for the entire sample, and they actually averaged 39% lower than the mean SD score for attempters identified by hopelessness alone. Furthermore, these lower-than-average SD subjects had scores on the Beck Depression Inventory nearly 68% higher, on average, than past-attempters identified by hopelessness alone, which is surprising in light of the well known relationship between hopelessness and depression. Similarly, the combined SD past-attempters tended to have higher scores on the Suicide Probability Scale (Cull and Gill, 1982). Clearly, the SD-combined past-attempters had low hopelessness scores, but they also had lower than average SD scores, and those low SD scores were associated with higher depression and Suicide Probability Scale scores.

It would seem that past-attempters who would have been rejected by the hopelessness procedure because of low hopelessness scores were picked up by the combined SD procedure on the basis of their lower than average SD scores. According to the Strosahl et al (1984) rationale, these subjects should have had their low hopelessness scores adjusted upwards on the basis of higher than normal SD scores.

Strosahl et al (1984) seem to be unclear about the manner in which they expect the SD effect to function. They

mention suppressor effects, adjusting scores to unmask "true" relationships, and eliminating spuriously elevated multiple correlations and predictive validity coefficients, all in the same paragraph. Generally, a suppressor relationship is implied when partial correlation with a third variable increases the strength of an initial relationship between two other variables (Nie, Hull, Jenkins, Steinbrenner and Bent, 1975; SPSS Manual). If partialling out Edwards SD scores resulted in an increased correlation between hopelessness and suicidal behaviours, a suppressor interpretation would be supported. It is this type of relationship that Strosahl et al (1984) are implying when the advocate adjusting scores because "parasuicidal patients may not fully divulge information about hopeless expectations, past and current suicidal ideation, or parasuicidal behaviour." (p. 449). However, their own data, as well as the present results, indicate that partialling out Edwards SD scores reduces the correlation between hopelessness and suicidal behaviours in certain contexts. This may explain why they have adopted the apparently contradictory stance that the SD effect produces spuriously elevated correlations between hopelessness and indices of suicidal behaviour. On the one hand, they expect such correlations to go up with SD assessment, and on the other hand, they expect such correlations to go down. They also expect improved prediction accuracy, in terms of reduced

false negative and false positives. This expectation was not supported by the results of the present study.

When the SD effect was assessed in the context of different sets of postdictor variables, the results were mixed. Generally, the inclusion of the Edwards scale resulted in increased canonical correlations and adjusted R-Squares. However, the results were inconsistent with regards to improvement in overall Hit-rates, false negative and false positive rates. At times, the Edwards scale added nothing to the variables already in the equation, and in some cases predictive (postdictive) validity actually decreased. Beta weights went up and down depending upon the variables and criteria utilized. It is by no means suggested that the variables used in the discriminant function analyses represent an optimal set of postdictors. These variables were selected out of clinical interest, theoretical interest, and convenience, much in the same way as Pokorny (1983) tested a "hand-picked" set of predictors in his prospective study of suicide. The present results suggest that a variety, if not all, of the sub-sets of possible predictors need to be examined in order to elucidate the relevance of the SD effect to suicide risk assessment (Huberty, 1984).

When scores on the Edwards SD scale were subjected to multiple regression analysis, a final group of only three variables accounted for 66% of the variance, with a multiple

R of .82: Thought Disturbance, Hostility, and Negative Automatic Thoughts. Strosahl, Linehan and Chiles (1984) noted that SD emerged as the first factor in a number of studies examining the structure of various personality inventories, and Crowne and Marlowe (1960) considered the Edwards scale to be confounded with psycho-pathological content. In the regression on SD scores, the Thought Disturbance measure had the largest Beta weight, and the particular scale used has moderately high correlations with all of the clinical scales of the MMPI (Carlson, 1982). It makes sense that low SD subjects would report a high frequency of negative Automatic Thoughts, and that high SD subjects would report few. It is interesting that Hostility accounts for significant variance in SD scores, in light of the previously discussed relationship between personality disorders, hostility, hopelessness, depression and suicidal behaviours (Kreitman, 1977; Morgan, 1979; Farmer, 1987). Extrapunitive hostility seems to have relevance to the differences between attemters and non-attempters, but it has less relevance to suicidal intent than does intropunitive hostility (Farmer, 1987).

An informal inspection of the Edwards scale revealed a number of items which would have face-validity as measures of hostility (e.g. "I can easily make other people afraid of me, and sometimes do the fun of it"; Edwards, 1970). If the Edwards SD scale does reflect extrapunitiveness, one can see

how it might be more relevant to the differences in personality between attempters and non-attempters, than it is to the states associated with suicidal intent, or the attitude towards future suicide.

Strosahl et al (1984) questioned whether SD or hopelessness was in the theoretically preeminent position. Multiple regression on hopelessness scores showed that 42% of the variance was accounted for by hostility, survival and coping beliefs, and depression. Scores on the Edwards SD scale had nothing to contribute when those three variables were adjusted for.

Following Nevid's (1983) hypothesis that SD has its effects by virtue of membership in a nomothetical network of related constructs, one can see from the regression analyses a network of variables all related to Beck's negative cognitive triad (Beck, Shaw, Rush and Emery, 1979). In the Hopelessness network, one sees depression, hostility, and a pessimistic attitude towards the value of life and one's own self-efficacy to cope; in the SD network, the postdictors are: thought disorder (cognitive distortion), negative self-thoughts, and, again, hostility.

The relationship between social desirability and parasuicide is not straightforward. Pallis and Birtchnell (1976) found that non-serious suicide attempters had the most pathological profiles on various MMPI scales, compared to serious attempters and non-suicidal individuals. Their

average social desirable scores were more than one full standard deviation below the mean. The effect was particularly striking for males.

The relationship between social desirability and parasuicide may vary according to the population studied. Strosahl et al (1984) acknowledged that the SD effect may vary according to different populations, and this appears to have been confirmed by Cole (1988), who replicated the Linehan and Neilson (1981, 1983), and Petrie and Chamberlain (1983) studies using treatment and non-treatment samples. Cole (1988) also noted the strong relationship between the Edwards scale and the K scale of the MMPI. Carbonell, Megargee, Moorehead (1984) studied the prediction of prison adjustment using self-report measures, and found negative correlations between the K scale and number of days in segregation, days on sick call, dormitory adjustment, and work performance. Low SD scores and parasuicide probably both reflect a degree of maladjustment socially and psychologically. Kreitman (1977) has noted that parasuicides tend to display a particular form of withdrawal from social life, because they have a disregard for group mores and conventions, and they show an unwillingness to accede to cultural demands. In the prison setting, Denoon (1983) has noted that suicidal inmates lose sight of socially ordained rules of conduct for themselves, and that they also tend to lose the same concern for others, which

makes them potentially dangerous. Hare (1983) describes a large percentage of the prison population as being characterized by egocentricity, lack of remorse and a lack of shame. Perhaps there is a connection between a lack of shame and a willingness to use parasuicide as an act of communication or a problem-solving tool. In Study I it was reported that the group of non-serious attempters had the lowest overall SD scores, and that they were also the most likely to have frequently told other people of their intent to kill themselves.

While Strosahl, Linehan and Chiles (1984) advocate SD assessment for the purpose of adjusting low hopelessness scores in association with high SD scores, Mendonca, Holden, Mazmanian and Dolan (1983) advise clinicians to include SD assessment procedures because of the possibility that hopelessness scores are influenced by the tendency to present oneself in an unfavourable light, and hence symptoms are over reported. It seems that clinicians need to interpret self-reports cautiously, regardless of SD scores, whenever suicidal risk is an issue.

SUMMARY AND CONCLUSIONS

The present study replicated the findings reported by Linehan and Nielsen (1981, 1983), Petrie and Chamberlain (1983), and Strosahl, Linehan and Chiles (1984). The

Edwards SD scale has moderately high negative correlations with the Beck Hopelessness Scale, and with self-reported measures of past parasuicidal behaviours and present attitudes towards suicide. While controlling for Edwards SD does affect the relationship between hopelessness and measures of suicidal behaviour, the Crowne-Marlowe scale does not show similar effects. The relationship between SD scores and hopelessness scores seems to be moderated by the choice of additional predictor (postdictor) variables and the type of criterion. The results seem to suggest that the SD effect may vary according to whether one is measuring past behaviour or present attitudes towads suicide.

A major limitation of the research conducted to date, including the present study, is the lack of validation using objective sources of collateral data or official records. Clearly, there is a need to examine prospectively the predictive validity of SD assessment using a criterion reflecting actual parasuicidal or suicidal behaviour. It is not clear what the value is of demonstrating an SD effect upon reports of past behaviour or current attitudes. SD may have value in assessing, or screening for, levels of psychopathology or personality dysfunction. Such procedures may be useful for identifying individuals in need of special attention because of emotional distress, or because they may have a tendency to "act out" in a destructive fashion. It is still not clear, however, whether such information will

have any utility in the prediction of suicidal behaviour in the future.

The meaning of low SD scores needs to be carefully evaluated, preferably using multiple measure/multiple method procedures (Cole, 1988). The meaning of a low SD score may vary according to the population studied, as well as in the context of the psychological state of the individual examined. There may be interaction effects between SD and constructs such as hopelessness, depression, and cognitive rigidity. The prison sample used in the present study undoubtedly differs from the general population in a number of ways, but this was the point of the recommendations by Strosahl et al (1984) and Cole (1988) for replication studies in different populations. It would be worthwhile to compare results using inmates not referred for psychological services.

Factor analyses and item analyses of relevant self-report measures would be helpful in elucidating the nomothetical network to which SD belongs (Nevid, 1983; Strosahl et al, 1984). With regards to the competing perspectives of shared substantive variants versus response-style bias, the current study suggests that neither perspective can be ruled out.

Until the significance of the SD effect can be firmly established and interpreted, it would be prudent for researchers constructing screening scales or instruments to

take the potential effects of such a factor into account. This caution is especially relevant in the prison setting, where social desirability factors and conditions mitigating against self-disclosure may be salient. Carbonell, Megargee and Moorehead (1984) and Steadman et al (1987) have discussed the differences between typical research procedures and the "real world", in which routine prison assessment instruments are used to influence classification and assignment to programs. In the present study, inmates were guaranteed anonymity and confidentiality, and official records were not accessed by the researcher. No conclusions can be made about the extent to which social desirability (or outright prevarication) might bias the information obtained by an "official" screening instrument (administered by security staff) of the type envisioned by Denoon (1983) for use in the local system. Much more research will be required before the hopes for a valid, reliable and efficient screening instrument can be realized.

OVERALL CONCLUSIONS

The two studies presented in this report examined the validity of using self-report measures to classify prison inmates on the basis of their histories of parasuicidal behaviour. An issue of concern in the first study was whether concepts about parasuicide generated in the general population, and the population of hospitalized suicide

attempters, would generalize to a sample of prison inmates.

A number of distinctions made between parasuicide types in the literature were found to apply to a prison sample. Inmates reporting previous serious suicide attempts were distinguished from a comparison group by higher levels of current suicide ideation and intentions, as well as by higher scores on measures of depression and the probability of suicide attempt, and by lower importance attached to various reasons for living. There were a number of other less significant differences which were consistent with reports in the literature, but for which the confidence level is low.

Non-serious attempters differed from the comparison group mainly on measures relating to coping ability, probability of a suicide attempt, negative self-evaluation and social desirability. There were a number of other differences with lower levels of confidence.

Self-mutilating inmates showed only minor differences from the comparison group, and do not appear to differ in terms of risk for suicide as a group.

The two suicide attempt groups differed more from the comparison group than they did from each other, and it may be difficult to distinguish between the two types of parasuicide on variables other than those relating to suicidal intent and parasuicidal behaviour.

Using self-report measures in the assessment and

classification of prison inmates may have some utility in identifying individuals with high-risk backgrounds and current levels of psychological distress, but this needs to be demonstrated through cross-validation, along with prospective research to determine predictive validity. No conclusions can be made about the predictive utility of the measures examined in this study.

The use of self-report measures administratively may be complicated by self-disclosure issues and social desirability effects. The Edwards scale of social desirability may function as a suppressor variable in prediction equations, but it may also contribute unique variance, depending on the nature of the other predictors used and the choice of criterion. Low scores on the Edwards scale are likely to reflect psychological maladjustment and may be useful as a marker for increased risk of suicide.

The construction of screening instruments should take into account potential social desirability effects. Interpretations of previous research on the utility of the Edwards scale of social desirability have not been straightforward, and the present study confirmed this. Multitrait/multimethod research designs should be used to clarify the theoretical meaning and practical utility of Edwards scale scores in the assessment of suicide risk.

APPENDIX A:

Supplementary

Statistics

TABLE 10B

SAMPLE GRAND MEANS AND STANDARD DEVIATIONS FOR VARIABLES OF THEORETICAL AND CLINICAL INTEREST (n = 114).

VARIABLE	MEAN	STANDARD DEVIATION
Hopelessness Scale	4.25	4.38
Depression (BDI)	17.56	10.26
ATQT	68.11	26.50
Edwards SD	24.73	7.76
Crowne-Marlowe SD	15.22	5.67
Suicide Probability Scale	66.66	21.00
Hopelessness (SPS)	21.22	7.79
Suicidal Ideation (SPS)	15.89	7.98
Neg. Self Evaluation (SPS)	15.34	4.26
Hostility (SPS)	14.21	4.58
Ideation Past Year	.79	.79
Coperisk	8.32	3.72
Reasons for Living (TOT)	187.05	40.50
Fear of Suicide (RFL)	2.39	1.02
Fear Social Disapproval	2.86	1.53
Family Responsibilities	3.94	1.46
Moral Concerns (RFL)	3.20	1.51
Child-Related Concerns	4.17	1.84
Survival/Coping Beliefs	4.58	1.00
Chemical Abuse (CPS)	27.49	6.89
Thought Disturbance (CPS)	32.26	9.33
Antisocial Tendencies (CPS)	42.70	10.05
Self Depreciation (CPS)	22.87	4.98
Involvement (CIES)	3.17	1.95
Support (CIES)	2.60	1.80
Excessiveness (CIES)	2.80	1.51
Autonomy (CIES)	3.42	1.80
Practical Orientation (CIES)	3.44	1.74
Personal/Practical (CIES)	2.59	1.57
Order/Organization	3.51	2.67
Clarity (CIES)	3.25	2.07
Staff Control (CIES)	6.13	1.51
Age	27.25	8.00
TIMEDONE	46.24	61.24

BDI: Beck Depression Inventory
ATQT: Automatic Thoughts Questionnaire
SD: Social Desirability
SPS: Suicide Probability Scale
RFL: Reasons for Living Inventory
CPS: Carlson Psychological Survey
CIES: Correctional Institutions Environment Scale
TIMEDONE: Total # months

TABLE 11B

SAMPLE CORRELATIONS FOR HOPELESSNESS, EDSD, ATTEMPT, CHANCE, HOSTILITY

	HPS	EDSD	ATTEMPT	CHANCE	HST'Y
HOPELESSNESS		-.50	.23	.43	.52
DEPRESSION (BDI)	.59	-.66	.41	.49	.50
ATQT (NEG. THOUGHTS)	.51	-.74	.43	.50	.52
EDWARDS SD	-.50***		-.44	-.40	-.58
CROWNE-MARLOWE	-.21**	.36	-.16	-.16	-.39
SPS TOTAL	.69	-.71	.42	.54	.77
HOPELESSNESS (SPS)	.63	-.65	.30	.44	.63
SUICIDAL IDEATION (SPS)	.60	-.60	.41	.61	.59
NEG. SELF EVALUATION (SPS)	.55	-.54	.39	.39	.49
HOSTILITY (SPS)	.52	-.58	.33	.29	
IDEATION PAST YEAR	.41	-.58	.51	.61	.43
COPERISK	-.47	.61	-.42	-.57	-.55
RFL TOTAL	-.40	.24	-.36	-.46	-.17
FEAR OF SUICIDE	-.04	-.27	-.07	-.06	.18
FEAR SOCIAL DISAPPROVAL	-.17	-.04	-.17	-.19	-.06
FAMILY RESPONSIBILITIES	-.25	.16	-.25	-.29	-.17
MORAL CONCERNS	-.16*	.08	-.21	-.09	-.09
CHILD RELATED CONCERNS	-.13	.11	-.12	-.20	-.09
SURVIVAL/COPING BELIEFS	-.46	.39	-.37	-.54	-.22
CHEMICAL ABUSE (CPS)	.31	-.37	.24	.28	.48
THOUGHT DISTURBANCE	.45	-.74	.41	.42	.47
ANTISOCIAL TENDENCIES	.39	-.20	.23	.26	.37
SELF DEPRECIATION (CPS)	.49	-.59	.38	.32	.47
PRACTICAL ORIENTATION(CIES)	-.11	.11	-.03	-.21	-.15
FAMILY SUICIDE ATTEMPTS	.16	-.33	.25	.23	.21
AGE	-.05	.13	-.05	-.15	-.22
TIMEDONE	.23	.02	.11	.20	.19
ATTEMPT HISTORY	.23	-.44		.34	.38
CHANCE OF FUTURE ATTEMPT	.43	-.40	.34		.29

BDI: Beck Depression Inventory;
ATQT: Automatic Thoughts Questionnaire;
SD: Social Desirability;
SPS: Suicide Probability Scale;
RFL: Reasons for Living Inventory;
CPS: Carlson Psychological Survey;
CIES: Correctional Institutions Environment Scale;
*: Correlations above .16 are significant beyond .05 level;
**: Correlations above .21 are significant beyond .01 level;
***: Correlations above .28 are significant beyond .001 level.
(n = 110).

TABLE 8B

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