

RELATIONSHIPS AMONG HOPELESSNESS, DEPRESSION, SOCIAL
DESIRABILITY, AND SUICIDAL BEHAVIOR IN INCARCERATED WOMEN
OFFENDERS

by

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ABSTRACT

Beck has identified hopelessness as the crucial variable in explaining the well-established link between depression and various cognitive aspects of suicidality. On the basis of its covariation with the Edwards Social Desirability Scale, Linehan and colleagues have proposed that self-reports of hopelessness are potentially confounded with social desirability response 'style', rendering any obtained scores severely qualified. Petrie and Chamberlain have suggested that the Crowne-Marlowe social desirability response 'style' has no influence on self-reports of hopelessness. The present study investigated the interrelationships among hopelessness, depression, social desirability, and three indices of suicidality - past history, frequency of recent ideation, and estimated future parasuicide likelihood - in the context of a female prisoner population. Fifty-four female inmates completed a structured interview, the Beck Depression Inventory, the Beck Hopelessness Scale, the Edwards Social Desirability Scale, the Crowne-Marlowe Social Desirability Scale, and the Suicidal Behaviors Questionnaire. Several theoretically relevant relationships were separately examined. First, the patterns of relations among depression, hopelessness and suicidality were investigated. Beck's hopelessness hypothesis was extended to include estimates of future parasuicide likelihood, but was not established for reported past or present suicidality. Secondly, the patterns of relations among depression, hopelessness, social desirability

and suicidality were examined. The data neither supported nor contradicted the proposal that hopelessness is potentially confounded with social desirability response 'style'. An equally plausible alternative explanation for the covariation of hopelessness and social desirability was suggested; namely that social desirability measures represent 'substantive' dimensions of personality, rather than 'stylistic' determinants of response bias. In addition, the utility of hopelessness, depression and social desirability as postdictors of suicidality was investigated. When results of three different regression analyses were compared, several important observations emerged: 1) the overall ability of hopelessness, depression, and social desirability (separately, or in combination) to postdict suicidality was poor; 2) although these variables demonstrated poor postdictive ability in an absolute sense, depression, social desirability, and to a lesser extent, hopelessness, were all relatively important postdictors of past, present, or future suicidality; and, 3) the postdiction of suicidality tended to vary markedly as a function of how the suicide criteria were defined and measured. Finally, the data presented herein strongly suggest that incarcerated female offenders may aptly be described as a group of individuals at high risk for suicidal behavior.

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A. Introduction

Suicidal Behavior

Suicide has been a complex phenomenon which has mystified, angered, fascinated and saddened societies for centuries. Not surprisingly, suicidal behavior has intrigued dozens of able scholars and its investigation has produced a correspondingly large number of theories.

Theories of Suicidal Behavior

Theoretical approaches to suicidal behavior can be classified into five general types: 1) sociological, 2) biological, 3) psychodynamic, 4) cognitive, and 5) learning theories.

Sociological theories view suicide as a function of a person's role and status in the social system. The classic sociological theory is that proposed by Durkheim (1951); his theory suggests that suicide reflects a disturbance in the individual's relation to society. Biological theories of suicide suggest either that suicidal tendencies may be inherited (Kallman & Anastasio, 1947) or that chemical changes taking place in the body may precipitate suicidal behavior (e.g., Bunny,

Fawcett, Davis, & Gifford, 1969; Struve, 1979). Psychodynamic theories, the most prominent theories in the clinical literature on suicidal behavior, view suicidal behavior as a product of internal unconscious motives. The classic motive imputed to suicidal persons by Freud (1957) is that of hostility, or aggressive impulses, toward an introjected and ambivalently viewed love object (e.g. a person); that is, aggression turned inward. Theories of suicidal behavior that view such behavior as an attempt to communicate (Farberow & Shneidman, 1961; Kreitman, Phillip, Greer, & Bagley, 1969) or solve a problem (Levenson & Neuringer, 1971; Stengel & Cook, 1958), as well as theories that consider it to be the result of hopelessness and impaired reason (Beck, 1963), can be classified as primarily cognitive in orientation. Frederick & Resnik (1971) conceptualized the development of suicidal behavior in learning terms: suicide potential = strength of past habits X drive strength. Their approach is a blend of psychodynamic and behavioral theories and draws heavily on the work of Dollard & Miller (1950). Diekstra (1973) developed a social learning theory positing that suicidal behavior is a method of coping with a crisis and that, as such, it depends on the presence of suicidal behaviors in a person's repertoire, acquired through socialization. Finally, Bestock & Williams (1974) have formulated suicidal responses as operant behaviors; a formulation based on the observation that suicide attempts are often followed by what appear to be rewarding consequences.

Although a multitude of explanations have been suggested to account for suicidal behavior, none has had overwhelming acceptance. Yet, at the same time, the frequency and catastrophic implications/consequences of suicidal behavior makes it a phenomenon that cannot be ignored.

Incidence of Suicidal Behavior

Suicide is recognized as a leading cause of death in most industrialized nations. Over 25,000 individuals a year kill themselves in the United States (U.S. Vital Statistics, 1973, 1975), and it has been estimated that two to eight times this number attempt suicide or 'parasuicide' a year (Farberow & Shneidman, 1961; Parkin & Stengel, 1965; Shneidman, 1979; Stengel, 1968). (Kreitman (1977) has proposed the term parasuicide as an alternative term to attempted suicide. It applies to any deliberate, non-fatal self-poisoning or self-injury, regardless of the degree of its medical seriousness or psychological intent, its operational definition requiring only a judgement concerning whether the person initiated the act of self-harm.) The rates for both parasuicides and suicides are increasing almost everywhere in the world (Brown, 1979; Weissman & Klerman, 1979). Reported suicide in Canada has increased dramatically over the last two decades, both in relative terms (as a proportion of all deaths) and in absolute terms (as an annual incidence rate per 100,000 in the general population)

(Termanson & Peters, 1982). Canada has shown a moderately high suicide rate of 12 - 14 per 100,000 over the past few years (Malla & Hoenig, 1982). In 1982, approximately 3523 Canadians were officially recorded as having committed suicide (Statistics Canada, 1982). On the provincial level, British Columbia currently has the third highest rate of suicide in the nation (Statistics Canada, 1982).

The overwhelming preponderance of evidence suggests that suicide is more often completed by men (Hankoff, 1979; Shneidman, Farberow, & Litman, 1970), whereas parasuicide is more often engaged in by women (Farberow, 1974; Kreitman, 1977; Litman, 1974). The differential suicide rates for men and women are impressive. In most European countries and on this continent, regardless of the overall suicide rate, two to four times as many men than women kill themselves according to official mortality statistics (Mann, 1971). In Canada, for example, official 1982 statistics revealed that there were 2726 male deaths by suicide and self-inflicted injury, compared to 797 female deaths; a male-female ratio of approximately 3.4 to 1 (Statistics Canada, 1982). This sex differential exists regardless of age, race, or marital status and also appears to remain stable over time. However, a notable trend in recent years is that the suicide rate for women is rising. The increase in female suicides appears to be worldwide (Lester, 1979). With respect to Canada, Termanson & Peters (1982) noted that, despite the consistently higher suicide rates among men, the pace of the

dramatic increase in reported suicide has been greater among women. As previously mentioned, the sex differentials are reversed for parasuicide. In the adult population of many countries, females commit parasuicide two or three times more often than do males (Freedman, Kaplan, & Sadock, 1972; Weissman, 1974). However, there is some evidence to suggest that male parasuicides have increased over the last two decades and that the sex differential in rates may be lessening (Aitken, Buglass, & Kreitman, 1969; Frederick, 1978; Teicher, 1979).

Clearly, there are differences in the expression of the suicidal urge by the sexes. More important, perhaps, is the fact that suicidal behavior appears to be a serious mental health problem, for both men and women. As such, it merits scientific study. Suicidology has become identified as the discipline which addresses itself to the scientific study of suicidal phenomena. Consistent with this mission, suicidologists have devoted extensive energy to both conceptual and statistical analyses of suicidal behavior. An overview of the literature available on the assessment and prediction of suicidal forms of behavior is provided.

Assessment and Prediction of Suicidal Behavior

Much effort has been expended over the last several decades investigating suicidal behavior. A major goal has been to attain sufficient knowledge of suicidal phenomena to permit accurate

assessment and prediction. Unfortunately, problems in the area of suicide research exist at almost every level.

Before describing the history of research efforts in the assessment and prediction of suicidal behavior, some of the difficulties implicit in this task are outlined.

The research in the area of suicidal behavior has been notoriously difficult. The ideal would be to describe a method of assessment such that the likelihood of future suicidal behavior for a given individual could be predicted with precision. However, ethical problems in determining if one's predictions are accurate, together with more general problems relating to the nature of suicidal phenomena and the prediction of infrequent events, make this task all but impossible. In order to more fully appreciate the inherent difficulties involved in the assessment and prediction of suicidal behavior, three relevant issues are discussed: 1) the prediction of infrequent events; 2) the 'time-bound' nature of assessments and predictions, and ; 3) the melange of suicidal behavior.

Suicidal forms of behavior despite their familiarity and seriousness, are infrequent, occurring in a very small proportion of our population. The relative rarity of suicide makes the task of forecasting such behavior for the individual exceedingly difficult. As bayesian theory dictates, when base rates are low, even a test with high specificity and sensitivity will still include far too many false-positives for practical utility (Meehl & Rosen, 1955; Rosen, 1954). Although the base rate can

be increased by focusing on populations which are at higher risk, or by including a wider range of suicidal phenomena, such as threatened or attempted suicides (Farberow & Mackinnon, 1975), we are still up against the intractable problem of predicting infrequent events. Indeed, one who predicts that no one will engage in suicidal forms of behavior can expect to be right most of the time, even as regards individuals classified at high levels of risk.

Clearly, we do not possess the tools to reliably predict particular suicidal acts before the fact. To complicate matters still further, it is important to note that many researchers use the term prediction inappropriately. Specifically, in many so-called 'predictive' studies, data collected retrospectively are actually postdictors rather than predictors of the criterion behaviors - 'retrospective prediction' is a nonsensical term. Moreover, as suicidal risk is a predictive statement of the probability of the occurrence of future suicidal behavior, it is not possible to 'postdict suicidal risk'. The alternative may be to obtain data on large numbers of high risk individuals and then follow the sample to determine who engages in suicidal forms of behavior. Unfortunately, this prospective method can be 'quite expensive', and considerable attrition of the sample may occur during the follow-up interval. Difficulties in validating predictions may also result from ethical considerations. That is, the ethical imperative to prevent suicidal acts if possible, often precludes experimental analyses of factors inducing

suicide. In light of these difficulties, postdictive studies may prove useful; that is, assessing what has happened in the past (postdiction) figures importantly in the assessment of suicidality and plays a supportive role for prediction. Indeed, knowledge about what a person has done in the past and what activities he/she is now engaged ('paradiction') are how clinical decisions about suicidal risk and prevention are often made.

Another reason the prediction of suicidal behavior is not likely to meet reasonable standards of precision is that predictions and assessments are 'time-bound' (Lettieri, 1974). 'Time-bound' refers to the status of the individual at the time measurements are made. All evidence suggests that suicidal intent is not constant within an individual. Rather the suicidal urge appears to be state-dependent (Murphy, 1983). As such, the most valuable time for an assessment or a prediction is when the individual is actively suicidal. This is obviously not always possible.

However, while it is clear that the suicidal urge refers to a current subjective state which fluctuates over time, it may be that these fluctuations vary between narrow limits (Neuringer & Lettieri, 1982). Even a sudden impulsive suicidal act often has an extensive background. For example, the history of a previous parasuicide is the single best prognosticator of suicidal potential. The suicide risk among those who previously have committed parasuicide has been estimated at 80 to 200 times that

for the general population (Motto, 1965; Tuckman & Youngman, 1963), and the most powerful prediction of a repeated parasuicide is a history of previous parasuicide (Farmer & Hirsch, 1980; Kreitman, 1977). Moreover, current suicidal ideation is also indicative of higher risk for suicidal behavior (Paykel & Dienelt, 1971). Pokorny (1966) estimated that the risk for suicide among ideators is 35 times that for a comparable nonsuicidal population.

Given the chronic background of most suicidal crises, it may be most useful to portray suicide acts as impulsive (state), but the predisposition to commit suicide or engage in life-threatening behaviors as long-standing and characterological (trait). As such, it seems probable that individuals who engage in suicidal behaviors more often are likely to experience the suicidal urge more often. Thus, it is felt that 'time-bound' assessments and predictions may prove useful in research on suicidal phenomena.

Yet another problem in the assessment and prediction of suicidal behavior arises from the nature of suicidal phenomena themselves. Much of the past research on suicidal forms of behavior has been done from the perspective that such behavior represents a monotonic or unitary continuum; live attempters, threateners, and even ideators have been studied in attempts to make generalizations about dead completers (Brown & Sheran, 1972; Farberow, 1982). However, there are serious questions about the extent to which data collected from one category of

suicidal persons can validly be generalized to other categories of suicidal persons. Although there is continuity among different forms of suicidal behavior - as revealed by statistics showing that the best prognosticator of future suicide potential is a past history of suicidal behavior and by recent research suggesting that people who show differing kinds of suicidal behavior nonetheless may show similar psychological phenomena (Lester & Beck, 1977) - the notion of a monotonic continuum is inappropriate. That is, although the evidence suggests that it makes sense to recognize that all acts of suicide fall on a continuum of lethality from thoughts through threats, attempts, and deaths, it does not follow that different forms of suicidal behavior are simply differences in degree of suicidal intent. Rather we must view each form of suicidal behavior as a phenomenon on its own; each associated with a diversity of actions and a range of ideation. This distinction is important in that it may suggest that assessment issues may be different for different categories of suicidal persons.

Clearly, research in the area of suicide assessment and prediction is necessarily complicated by the variegated spectrum of suicidal behavior.

Unfortunately, an easy solution to the difficulties involved in suicide research cannot be offered. Rather, it is suggested that, despite the problems inherent in studies of assessment and prediction, they do provide the clinician with useful information. Clinical decisions are guided by our

knowledge both of the phenomenology of suicidal behavior and of the individual. The more available descriptions there are of persons who have engaged in suicidal behaviors, especially if they fall into recognizable subgroupings, and the more widely these descriptions are known, the greater the likelihood of an appropriate clinical response. As stated by Motto (1980): "We must persist in efforts to supplement intuitive judgement with measuring instruments, although, at present, our clinical skills are the best tools we have in individual cases." We turn now to an examination of such research efforts.

Historical Overview

In the past, predictive statements concerning suicidal behavior were often based upon demographic variables. Although demographic data are useful to demarcate large groups of individuals at higher risk for suicide, they are far too general to be of practical use in the individual case (Beck, Kovacs, & Weissman, 1979; Murphy, 1983)

Increasingly high suicide rates and the need to quickly identify persons who are serious suicide risks encouraged continued research interest in the use of psychological tests to assess and predict suicidal behavior. The research in this area is complicated by numerous methodological problems, as previously noted. These include: timing; sampling (definition of criterion groups); selection of control groups; low base rates;

and ethical considerations. The recommendation to focus on higher -risk groups to improve the base rate is also relevant, although psychological tests are generally considered more useful for screening purposes than for clinical evaluation. Indeed, most researchers agree that early efforts to employ standard psychological tests to assess or predict suicidal behavior have not been fruitful (Brown & Sheran, 1972; Lester, 1970, 1972, 1974; Motto & Heilburn, 1976). There has been essentially no change in this opinion as a result of investigations in the 1970s (Farberow, 1982).

In contrast to the use of standard psychological tests in the prediction and identification of suicide risk, it has been often recommended that, particular variables and scales that encompass various attributes of suicidal behaviors be developed (Lester, 1970, 1972, 1974) and that they be developed for specific subpopulations and settings (Brown & Sheran, 1972).

Beginning in the 1970s, work in the area of suicide assessment and prediction has focused on the construction of clinical scales to quantify various aspects of suicidality (see Farberow (1982) for a comprehensive review of available scales.) Under the direction of A. T. Beck, the University of Pennsylvania has been a major center of activity in the development of such clinical scales.

Beck: The Depression-Hopelessness-Suicide Interrelationship

In the last decade, Beck and his associates have produced several scales designed to quantify various ideational or cognitive dimensions of an individual's suicidal ruminations. These scales reflect Beck's model of suicidal behavior, which posits an important role for cognitive content as a precursor to the suicidal condition; the belief is that a familiarity with cognitive variables will enable one to assess suicidal risk more accurately, and provide one with a workable entry point for psychotherapy with the suicidal individual.

A variety of experimental and correlational studies of depressed suicidal patients conducted by Beck and his colleagues (Beck, 1967) provided the framework for Beck's formulation of suicidal behavior as related to cognitive content; specifically, cognitive distortions. On the basis of an intensive study of 50 depressed suicidal patients in psychotherapy, Beck (1963) noted that "the suicidal preoccupations ...seemed related to the patient's conceptualization of his situation as untenable or hopeless The suicidal patients generally stated that they regarded suicide as the only possible solution for their desperate or hopeless situations." Accordingly, Beck's thesis of suicidal behavior combines two themes: namely the concepts that hopelessness is the catalytic agent and that "impaired reason" plays an important role in most cases of hopelessness and, consequently, in suicidal behavior. Thus, the depressed patient

systematically distorts his/her experiences in a negative way and, without objective basis, expects a negative outcome to any attempts to achieve his/her major goals.

The testing of Beck's hopelessness hypothesis of suicidal behavior led to the development of measures of suicidal intent, hopelessness and later, suicidal ideation. The Suicide Intent Scale (SIS) (Beck, Schuyler, & Herman, 1974) was developed with the objective of evaluating the suicide intent of an attempter before, during, and after the unsuccessful suicidal act. The SIS obtains information about the objective circumstances of the attempt and evaluates the attempter's conception of the method's lethality, his/her understanding of the method, and the expectations of the possibility of rescue. The Hopelessness Scale (HS) (Beck, Weissman, Lester, & Trexler, 1974) was designed to assess a respondent's negative expectancies toward self and toward the future. The underlying assumption is that hopelessness can be readily objectified by defining it as a system of cognitive schemata that share the common element of negative expectations. The Scale for Suicidal Ideation (SSI) (Beck, Kovacs, & Weissman, 1979) was developed to quantify the intensity of current conscious suicidal ideation, including "suicidal threats" that have been expressed both through overt behavior and verbalization to others. The SSI examines the respondent's wish to die and wish to live; feelings of control around suicidal ideation; and the frequency and duration of suicidal thoughts, along with the respondent's attitudes towards

them.

Utilizing these scales in conjunction with the Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), Beck and his colleagues have repeatedly found that hopelessness correlates more highly with suicidal intent and ideation than does the global concept of depression of which it is part. For example, in a study of 384 hospitalized suicide attempters, Beck, Kovacs, and Weissman (1975) found that, while depression and hopelessness were related to suicidal intent, the relationship between depression and suicidal intent disappeared when hopelessness was controlled, the reverse was not true. Regardless of whether the BDI scores were high or low, the patients with high hopelessness had higher intent scores. The study of Beck et al. (1975) replicated earlier findings by Minkoff, Bergman, Beck, and Beck (1973). Hopelessness was consequently nominated as "the missing link" between depression and suicide. Other researchers have since re-examined this association. A close relationship has been found between hopelessness and suicidal intent in a variety of clinical samples, including suicide attempters, threateners and psychiatric controls (Dyer & Kreitman, 1984; Wetzel, 1976) as well as drug-dependent individuals (Beck, Weissman, & Kovacs, 1976; Emery, Steer, & Beck, 1981; Weissman, Beck, & Kovacs, 1979; Wetzel, Margulies, Davis, & Karam, 1980). Subsequent studies have also substantiated the significance of hopelessness in suicidal ideation. Hopelessness and depression have shown the

same relationship to suicidal ideation as they do with suicidal intent in suicide attempters (Petrie & Chamberlain, 1983), hospitalized self-destructive ruminators (Beck, Kovacs, & Weissman, 1979), outpatient alcoholics (Beck, Steer, & McElroy, 1982) and college student suicide ideators (Schotte & Clum, 1982). With the exception of Pokorny, Kaplan, & Tsai (1975), who found that among suicide attempters, the correlation between hopelessness and suicidal intent was lower than that between depression and suicidal intent, the accumulating data support Beck's clinical and theoretical hypothesis that hopelessness is more crucial to suicidal behavior than depression in general.

In summary, although depression is a common finding in parasuicides (Weissman, 1974) and suicides (Sainsbury, 1978), the association between depression and suicidal behavior is not as clear as was once thought. Recent suicide research has profited from important methodological advances in the means of measuring the variables involved: Hopelessness appears to be an important sign, perhaps more telling than depression, of the suicidal condition. The data suggest that the continued, intensive study of cognitive aspects (such as hopelessness) of suicidal behavior holds promise for suicidologists.

Recently, however, there has been an upsurge of interest in the issue of social desirability and its relevance to the measurement of hopelessness and suicidal behavior.

The Hopelessness-Social Desirability- Interrelationship

In the initial study of this interrelationship, Linehan & Nielsen (1981) explored the association between hopelessness, reports of suicidal behavior, and the general tendency to answer questions in a socially desirable fashion. They presented the following results for a general population sample: 1) the HS is highly negatively correlated with the Edwards Social Desirability Scale (ED-SDS) (Edwards, 1957); 2) the positive relationships found between hopelessness scores and self-reports of prior, current, and predicted future suicidal behavior (as measured by the Suicidal Behaviors Questionnaire (SBQ), Linehan, 1981) is lost or substantially reduced when social desirability scores are controlled, and 3) the magnitude of this effect increases for persons reporting a previous history of serious suicidal ideation or parasuicide. Linehan and Nielsen (1983) presented further data on the relationship of social desirability, hopelessness, and predicted future suicidal behavior collected from an inpatient psychiatric population. Results were similar to those obtained earlier with the general population sample. Linehan & Nielsen concluded that self-reports of hopelessness are potentially confounded with social desirability and should therefore be used with caution in research and in assessing suicidal behavior. They further recommended using self-reports of hopelessness and social desirability concurrently to avoid false-negative predictions;

that is, due to the possible confounding of the HS with ED-SDS response set, the risk indicator (hopelessness) may 'predict' that the probability of current or future suicidal behavior is low, when suicidal behavior is currently ongoing or highly probable in the future. (If persons are feeling quite hopeless, yet divulge only socially desirable information, they become false negatives.) In accordance with Linehan and Neilsen's view that the usefulness of the HS may be limited by the possible confound of social desirability responding, Petrie and Chamberlain (1983) further examined the pattern of relations among these variables in a sample of suicide attempters. In this study, subjects completed the HS, the Crowne-Marlowe Social Desirability Scale (CM-SDS) (Crowne & Marlowe, 1960), and the Zung Depression Scale (Zung, 1965). The criterion measure was the Zung Index of Suicide Potential (Zung, 1974), which includes items about past and current suicide ideation and parasuicidal behavior. In contrast with the results of Linehan and Nielsen (1981, 1983), Petrie and Chamberlain's results indicated that, although the HS correlated negatively with the CM-SDS, hopelessness remained significantly correlated with self-reports of parasuicidal behavior and suicidal ideation when social desirability was controlled. (Depression was similarly unaffected by social desirability.) These authors concluded that the HS is appropriately used in suicide assessment.

In reviewing Petrie and Chamberlain's (1983) findings, Strosahl, Linehan & Chiles (1984) proposed that the key factor

contributing to these discordant results is that the CM-SDS is not really a measure of social desirability, but rather measures the tendency to lie or engage in deliberate image manipulation. As such, these authors interpreted Petrie & Chamberlain's findings as revealing that the HS is not moderated by dissimulation response set - an interesting disclosure but quite independent from the issue of social desirability response style. Furthermore, Strosahl et al. (1984) elaborated their earlier claim that social desirability response style may cloud the 'logical validity' of the HS, by explicitly nominating social desirability response set as a candidate for a suppressor variable. The value of social desirability, from this perspective, is to 'adjust or correct' scores on the independent 'predictors' in order to provide a more accurate representation of the 'true' score on the hopelessness dimension. As such, the clinical utility of including social desirability assessment is defined by the extent to which its inclusion enhances the ability to classify accurately individuals according to their suicide potential; that is, clinical utility is determined by the capacity of social desirability to reduce the rate of false negatives, while enhancing "prediction" accuracy in general. The suppressor potential (clinical utility) of the ED-SDS was then analyzed using both a general population and psychiatric sample (Strosahl et al., 1984). General population subjects completed the HS, the ED-SDS and the SBQ. Psychiatric patients completed the same measures in addition to the BDI. Three questions on the

SBQ served as the suicidal criteria: 1) historical reports of suicide ideation and parasuicide; 2) reports of frequency of suicidal ideation within the past year, and; 3) estimations of future likelihood of parasuicide. Stepwise hierarchical regression and discriminant function analyses were conducted to determine the ability of hopelessness, depression, and social desirability to classify subjects accurately on each of the three suicide criteria. The following results were presented: 1) 'prediction' accuracy is increased by the inclusion of social desirability, especially among psychiatric patients and when historical reports of suicidal behavior are targeted, and; 2) using only hopelessness, depression, and social desirability in suicide 'prediction' still yields a 'dangerously' high level of false negative cases in both general population and psychiatric samples. These authors concluded that a social desirability 'correction factor', built into self-report estimates of hopelessness, depression or suicidal behavior has the potential for reducing false negative errors. They also suggested that standards for assessing the clinical utility of incorporating social desirability in the suicide assessment battery be established and tailored to the target population of interest.

At this stage, it is important to note that, although Linehan's research team and Petrie and Chamberlain (1983) appear to be 'on opposite sides of the fence', in actual fact their dispute is purely an empirical one. On a theoretical level, both sets of researchers are in agreement. Though Linehan and

colleagues contest Petrie and Chamberlain's designation of the CM-SDS as a measure of social desirability, both groups of investigators share a similar viewpoint; namely, that the possibility that the HS may be confounded by social desirability would impose severe limitations on the use of the scale. This point of view coincides with the conceptualization of social desirability as a stylistic determinant of response bias; that is, stylistic tendencies to answer personality items in a direction considered socially desirable (culturally approved) rather than in terms of honest self-evaluation (see Wiggins, 1973). These tendencies qualify as response styles because they refer to organized dispositions within people to respond in a consistent manner across a variety of substantive domains (Wiggins, (1968) (cited by Wiggins, 1973).

Within the field of structured personality assessment, the phenomenon of response styles has been the subject of much research and controversy. The invocation of social desirability response style as a potential confound in hopelessness assessment is no exception. Recently, a debate focusing on the issue of social desirability and its relevance to the interpretation of the HS has arisen (Linehan & Nielsen, 1981, 1983; McRae & Costa, 1983; Nevid, 1981; Strosahl et al., 1984). This exchange has demonstrated continuing ambiguity about the status of social desirability as an issue in personality assessment; reflecting a special instance of the more general disagreement over the meaning of responses to structured

personality inventories.

The theoretical debate concerning social desirability has been posed in a 'style' versus 'content/substance' framework. Specifically, the controversy arises because differing interpretations are made regarding the role of social desirability as: 1) a response 'style' representing either nonsubstantive or substantially irrelevant components of response to structured personality items (Linehan & Nielsen, 1981, 1983; Petrie & Chamberlain, 1983; Strosahl et al., 1984), versus; 2) an important piece of information not to be treated as style, but rather as a 'substantive' trait, measuring substantive dimensions of personality (McRae & Costa, 1983; Nevid, 1981). Proponents of response style interpretations of scores on personality tests have taken the position that social desirability response style operates independently of item content and thus constrains the extent to which scales may be thought of as measuring substantive dimensions of personality. This stylistic point of view assumes that individuals high in social desirability will appear to score higher on measures of psychological adjustment, agreeableness, conscientiousness and other socially desirable traits than they actually are. Individuals low in social desirability will give a more accurate portrait of themselves. Proponents of substantive interpretations of scores on personality tests have taken the position that social desirability scales are substantively related to such personality traits as psychological adjustment

and conscientiousness. This substantive point of view assumes that, although a social desirability bias would produce high scores on measures of socially desirable traits, other, nonartifactual personality characteristics could also result in high scores. Individuals who are in fact well-adjusted, agreeable, and conscientious would appear to be high in social desirability. Consequently, when a social desirability scale (such as the ED-SDS) is correlated with a personality measure (such as the HS), two interpretations are possible. The personality measure may be subject to the operation of the response bias measured by the social desirability scale: Individuals high in social desirability will appear to score lower on the measure of hopelessness than they actually are ('response style'), or the two constructs may be related at the theoretical level - that is, the social desirability scale may include content related to the personality dimension or the personality dimension may include content related to the social desirability scale: Individuals who obtain low scores on the social desirability measure are in fact feeling hopeless about their lives, seeing themselves negatively, and/or are less concerned with the social impressions they leave about themselves than those who score high ('substance').

The central role that Linehan and associates assign to the ED-SDS as a stylistic determinant of response bias raises problems of interpretation; that is, the ED-SDS may represent potential variance to be contended with when attempting to

establish the meaning of responses to the HS, but then again it may not. As it is impossible to compare individuals' self reports with their 'true' personality scores, and because verification from other sources is extremely difficult to obtain, the determination of the proportion of style versus substance in a social desirability scale is almost inconceivable.

In summary, Linehan and her colleagues have suggested: 1) that previous studies showing hopelessness significantly correlated with indices of suicide are subject to reinterpretation because of failure to control the confounding influence of social desirability response set variance represented in the HS ; and 2) that social desirability should be invoked as a suppressor variable, in order to correct scores on the HS and provide a more accurate representation of the 'true score' on the hopelessness dimension. By denying any meaningful relationship to the covariation of social desirability and hopelessness - that is, denying a substantive interpretation - these authors have cast doubt on the construct validity of the HS. Given the seriousness of this assertion, a re-examination of the relationships among social desirability , hopelessness and depression in the measurement of different suicidal criterion behaviors is deserved. Further, and perhaps holding more promise for clinicians, is the need for an intensive study of the practical significance of these variables in the assessment of suicidality.

Finally, it has frequently been found that the psychological correlates of suicidal behavior for one population may differ greatly from those found for another population. Consequently, it has often been recommended that more research be done on the complex patterns of suicidal behavior within different subpopulations and settings. Such analyses are especially relevant for the female criminal offender who is institutionalized in a correctional facility.

Criminal Offenders

In the past, researchers have concentrated their efforts and resources on male offenders to the general neglect of female offenders. Although female crime has received more attention recently both in the popular and professional literature, generally information on women offenders is sparse and incomplete. The majority of studies on both male and female offenders have focused on developing a model of criminality. It is evident that until fairly recently, the suicidal behavior of criminal offenders has been a longstanding and generally neglected problem. In recent years, however, a fruitful exchange of knowledge on etiology, 'prediction' and prevention of prisoner suicidal behavior has developed. Despite this novel interest in prisoner suicidality, very few studies of the suicidal patterns of female offenders have been undertaken.

In view of the general scarcity of research on the suicidal behavior of female offenders, the incidence of suicidal behavior in male penal environments and the research on this subject is briefly summarized. Following this review, a composite overview of the female offender from a psychological perspective is presented in conjunction with selected research pertinent to female prisoner suicidality.

Suicidal Behavior in the Male Prison Population

Although suicidal behaviors are not unique to only certain individuals or groups within society, the incidence of suicidal behavior in prison appears to be disproportionately high among criminal offenders when contrasted with non-prison populations.

The available information from a number of European countries as well as sources in the United States, have established a significantly higher incidence of suicide in penal settings when compared to the baseline suicide rate in the 'outside world' (see, for example, Goldfarb, 1975; Menninger, 1957; Nielsen, 1981; R.N.Y.U., 1974a; Topp, 1979; Fully, Hivert, & Schaub, 1965, cited by Burtch & Ericson, 1979). The axiom that prisoners commit suicide proportionately more than do non-prisoners is upheld in Canadian prisons. Burtch & Ericson (1979) arrived at a suicide rate for male inmates in Canadian Federal penitentiaries which was almost seven times greater than that which exists for the general population.

According to more recent reports, Canadian federal inmates were eleven times more likely to commit suicide in 1982-1983 than the average adult Canadian, while the suicide rate for provincial Canadian inmates was almost four times that of the adult Canadian population (Statistics Canada, 1982-1983). Even more dramatically, suicide currently represents the leading cause of death within penal settings in this country (Statistics Canada, 1982-1983). Amongst this group, British Columbian prisoners have the second highest rates of death by suicide (Statistics Canada, 1983-1983).

With respect to non-fatal suicidal behavior among criminal offenders, the available information is sparse. One of the continuing difficulties hampering this type of research is the poor method of recording non-fatal suicidal acts in penal settings. Consequently, it is generally acknowledged that prison self-injuries are grossly and inadequately reported. Although it is not possible to state with certainty what the baseline for self-inflicted injury is among the prison population, it is generally accepted that there are a great many more parasuicides than suicides within prison institutions (for example, Burtch & Ericson, 1979; Denoon, 1983; Supply & Services Canada, 1981) and that a high incidence of self-mutilation is seen among male prisoners (for example, Danto, 1973; Rieger, 1971).

In summary, the phenomenon of suicidal behavior by prisoners appears to be an especially problematic area for prisoners, as well as clinicians and security staff, which

deserves closer examination.

Although suicidal behavior has received enormous scrutiny during this century, a best estimate would suggest that only 18 studies of prisoner suicides have been carried out between the years of 1897 and 1970 (Farberow, 1972). The value of these studies was diminished by the dated nature of several of these references and the number of reports which have been published in foreign-language periodicals. In recent years, however, relatively large scale studies have dealt with suicides in British (Topp, 1979), French (Fully, Hivert, & Schaub, 1965), and Canadian (Burtch & Ericson, 1979) penal settings, while more eclectic works related to the suicidal behavior of prisoners in the United States and elsewhere have been published (see, for example, Danto 1973). Regarding Canadian prisoners, the Correctional Services of Canada has conducted a study of self-inflicted injury and suicide in Canadian Penitentiaries for the 1970's (Supply & Services Canada, 1981), while locally the Ministry of the Attorney General for British Columbia has furnished a report on suicides occurring within the provincial prison system (Denoon, 1983).

The majority of these studies have relied solely upon analyses of demographic, temporal, and situational factors, mostly without taking advantage of adequate comparison or control samples. Owing to these methodological inadequacies, the conclusions have been limited. Nevertheless, these studies have identified several factors and symptoms associated with suicidal

behavior among incarcerated offenders, which deserve mention. These factors include: 1) suicidal inmates are generally in their twenties, typically younger than most inmates; 2) suicidal inmates tend to act out more serious suicidal behaviors early during their incarceration, while suicide threats and gestures appear to be more common among prisoners who have been incarcerated for extended periods of time; 3) the vast majority of inmates who kill themselves do so by hanging, while in the area of parasuicide and self-mutilation, self-cutting is the favored means; 4) suicidal inmates generally have a previous record and have previously been in jail; and 5) many inmates who suicide or parasuicide have extensive psychiatric histories, including previous threats and/or attempts at suicide.

While these studies have established that samples of male prisoner suicides and self-inflictors are over-represented on factors in a number of areas, these differences are typically not more than suggestive. They are not readily usable as diagnostic tools for suicide prevention, nor do they appear useful in suicide prediction.

In summary, its seriousness notwithstanding, our present understanding of the complex issues surrounding the suicidal actions of incarcerated male offenders is inarguably weak. The need for reliable data concerning the suicidal behavior of inmates and its psychological correlates is clear. This need refers not only to male criminal offenders, but also encompasses their female counterparts. We turn now to an examination of the

research on the female offender.

Female Criminal Offenders

The majority of research on criminal offenders has focused on male criminals. Recently, however, concern over the rapidly increasing number of women arrested and incarcerated, as well as the types of offences committed by women, has resulted in a greater interest in understanding and affecting female criminality. Although a number of studies focusing on female offenders have been published during the last two decades, many of these studies are observational and methodologically imperfect. Moreover, while a number of books on the subject of female criminals have appeared recently (for example, Adler, 1975; Simon, 1975), primarily they take a economic, political, and/or sociological perspective. The literature which focuses on the more psychological aspects of female criminality for the most part represents unsupported impressions and assertions by clinicians and correctional officers. Within this literature, the information relevant to the suicidal behavior of female inmates is meagre.

A complete review of the empirical literature which deals with the female criminal from a psychological perspective has been done by Widom (1978). Based on Widom's (1978) comprehensive review, a composite psychological overview of the female offender is presented as background toward understanding the

population under study.

With reference to social and demographic characteristics, the literature has consistently shown that female criminals as a group come from the lower socioeconomic classes, from families with a high incidence of parental absenteeism, and as a group show marked educational underachievement, and, frequently, lower IQ scores (Climent, Rollins, Ervin, & Plutchik, 1973; Cloninger & Guze, 1970a). The picture thus far painted of the female offender is not too different from the male. In addition, a high rate of disruption and disorganization (high divorce rates, serial marriages, and frequent illegitimate children) in the marriages of female offenders clearly exists. With regard to psychiatric diagnosis, the results of studies of female criminals typically suggest high rates of psychiatric abnormality, the most consistent diagnoses being that of neurotic and unstable personality (for example, Cloninger and Guze, 1970b; Glueck and Glueck, 1934). However, many of the data used to support such findings are based on instances of adverse family background or environment influences which are questionable indicators of psychiatric abnormality in the women themselves. In addition, Widom (1978) suggests that the diagnoses assigned to women offenders describe characteristics associated with femininity in general (e.g. neurotic symptoms and emotional instability) and might not differ in their frequency from what would be found in a more general sample of noninstitutionalized females. With regard to psychopathic

behavior, it is interesting to note that compared to research and theorizing on male psychopaths (see Hare and Schalling, 1978), the state of knowledge of the existence, extent, and characteristics of psychopathy in females is quite rudimentary. Estimates of the frequency of psychopathy in female offenders range from a low of two percent (Woodside, 1962) to a high of 65 percent (Cloninger & Guze, 1970b). Widom (1978) suggests that there is enough evidence to conclude that the female psychopath does exist, but that the frequency of this syndrome in the female offender population seems to be smaller than the frequency of psychopathy in male offender populations. Finally, as suggested by d'Orban (1971), detailed surveys of male prison populations with which to compare these findings are generally not available so that any statement regarding female offenders' psychiatric abnormality vis a vis male offenders are totally unwarranted.

Turning to personality characteristics, although frequent attempts have been made to discriminate criminals from noncriminals on the basis of personality test results, until recently there have been few empirical investigations of the female offender. Since the late 1960's, increased research attention has been focused on the female offender, but there have been few replications or extensions of these findings, making the results of each study somewhat tenuous. The only exceptions to this are the few studies of female criminals using the Minnesota Multiphasic Personality Inventory (MMPI).

Utilizing the MMPI, consistencies have been found across diverse delinquent and criminal groups; specifically, mean MMPI profiles with scales 4 (psychopathic deviate) and 6 (paranoia) having the highest elevations (e.g. Hannum, Menne, Betz, & Rans, 1973; Hannum & Warman, 1963; Warman & Hannum, 1965). Differences between incarcerated male and female offenders have also been suggested by studies that compared MMPI scores obtained from samples of these two groups. These studies identified differences between male and female prisoners on as few as four (Panton, 1974) and as many as ten (Joesting, Jones, & Joesting, 1975) of the 13 conventional scales of the MMPI. On the basis of these studies, several authors have seriously questioned the generalizability of the results of research on male criminals to female criminal populations.

In summary, two major conclusions are highlighted by the composite psychological overview of the female offender. The first is that evidence regarding the personality characteristics and individual psychopathology of female offenders is not conclusive, and the second, is that the substantial body of research on male offenders may be of limited use because of apparent differences between male and female offenders.

Before turning to an examination of selected research pertinent to the suicidal behavior of female offenders, a commentary on the woman criminal from a Canadian perspective is offered.

To begin, there exists in Canada a basic lack of information about female offenders. Prior to the mid 1960's, there was virtually nothing written about the Canadian female incarcerated offender. One of the possible reasons female prisoners have received such scant attention is that they represent such a small proportion of the total Canadian incarcerated population. Female offenders have consistently comprised approximately two percent of total federal admissions and approximately six percent of total provincial admissions (Statistics Canada, 1982-1983). During the sixties, attention was focused upon the nature of the structural policies and practices of the criminal justice system in its response to the female offender (Canadian Corrections Association, 1969; Canadian Committee on Corrections, 1969; Royal Commission the Status of Women, 1969). In the late seventies, there was a flurry of interest in Canadian female inmates, and several commissions were formed to investigate both the problems with and the needs of female offenders, and to provide basic descriptive data on the population (for example, Clark, 1977; Griffiths & Nance, 1980; Solicitor General Canada, 1978). On the provincial level, a search of the literature revealed several reports on the female population in Canadian correctional institutions (for example, Bulmer, Burns, & Edgar, 1974; Lambert & Madden, 1976; Mackey-Jamieson, 1979). Based on these reports, the typical Canadian female offender may be described as: young, single, poorly educated, lacking in job experience, the product

of a seriously disrupted family background, alcohol and/or drug dependent, and, highly disturbed personally (including past suicidal ideation and/or parasuicide).

Although these reports provide useful general knowledge regarding the population under consideration, they offer very little direct information on the suicidal patterns of female prisoners.

As previously noted, the literature on suicidal behavior among female inmates is very meagre. Nevertheless, there is some cross-cultural data available which suggests that female prisoners are more likely to suicide than their non-prison counterparts (Burtch & Ericson, 1979), and that the suicide rates among female prisoners are proportionately lower than those of male inmates (Burtch & Ericson, 1979; Fully et al., 1965; R.N.Y.U., 1974b) - specifically, a sex differential of approximately 4 to 1. In contrast, on the basis of a ten year study (1970-1980) of the incidents of suicide in British Columbia correctional centres, Denoon (1983) proposed that the incidence of suicide roughly reflected the same rate for both male and female inmates. It is important to note however, that the data used to support all of these findings were based on very few instances of recorded female offender suicide; the limitations of generalizing from such few cases must be stressed.

With respect to non-fatal suicidal behavior among incarcerated women offenders, only two studies were uncovered in

a comprehensive search of the literature. Recently, Supply and Services Canada (1981) completed a cross-classification of non-fatal self-inflictors by sex of federal inmates. Although the rate of self-inflicting was found to be higher for women than for men, this difference was not statistically significant. In 1977, Cookson conducted a survey of self-mutilation among female inmates in an English prison. In this study, psychological, criminal, and social characteristics of the self-mutilating women were compared with those of the prison population as a whole. The most significant findings were that the self-mutilating women were younger than the norm, had longer sentences, more violent offences and higher hostility scores, particularly in the intro-punitive direction (guilt and self-criticism). The most common form of injury was cutting the arm ('slashing'), and the most common weapon, a piece of glass. Finally, the incidents were found to occur in 'epidemics'.

In view of the general scarcity of research in this area, there are no strong conclusions to be drawn concerning the suicidal behavior of female prisoners. In general, information on the female offender, especially the Canadian female offender, is sparse. Moreover, most of the data collected to this point has limited use in attempting an analysis of a complex issue such as female offenders and their patterns of suicidality. Clearly, research directed towards elucidating the psychological factors involved in suicidal behavior among women offenders is greatly needed.

The Present Study

The present study was primarily concerned with investigating the interrelationships among suicidality, depression, hopelessness, and social desirability in the context of a female prison population. As part of this inquiry, various relationships of general theoretical and clinical relevance were examined. In addition, the utility of depression, hopelessness and social desirability as postdictors of suicidality was of special interest.

Relationships of Interest

1. Beck has identified hopelessness as the crucial variable in explaining the well established link between depression and various cognitive aspects of suicidal behavior, including suicidal intent and suicidal ideation. However, the hopelessness hypothesis has not been established with a population of incarcerated offenders, nor has it been extended to include past or estimated future manifestations of suicidal behavior. Thus, commensurate with Beck's theoretical framework, the first purpose of the present study was to investigate the patterns of relations among hopelessness, depression and three suicidal behaviors - past history, current ideation, and estimated future suicide potential - for a population of women criminal

offenders.

2. Viewing social desirability as a stylistic determinant of response bias, Linehan and associates have proposed that the relationship of social desirability responding (as measured by the ED-SDS) to measures of hopelessness, poses theoretical problems and brings into question the utility of hopelessness in research on suicidal behavior. From a similar perspective, Petrie and Chamberlain have suggested that the relationship of social desirability responding (as measured by the CM-SDS) to measures of hopelessness has no effect on the significant relationship between hopelessness and various forms of suicidal behavior. While recognizing that the conceptualization of social desirability as a response 'style' poses problems of interpretation, the corroboration of previously reported relationships among hopelessness, depression and social desirability in the measurement of suicidal behavior would provide useful cumulative information. As such, the second purpose of the present study was to examine the patterns of relations among hopelessness, depression, social desirability (as measured by both the ED-SDS and CM-SDS) and three indices of female prisoner suicidality: past history, current ideation and estimated future suicide potential.

Utility

3. Although an examination of the interrelationships among hopelessness, depression, social desirability, and female inmate suicidality is deserved, a clinically relevant alternative involves an evaluation of the usefulness of hopelessness, depression and social desirability as postdictors of suicidality. Within this framework, social desirability measures are viewed as potentially useful postdictors in their own right, rather than implicit contaminants of hopelessness and/or depression inventories. Representing an attempt to evaluate the practical significance of hopelessness, depression and social desirability assessments, the third purpose of the present study was to investigate how well these variables (separately, or in combination) relate to three different suicide criteria, seen postdictively.

4. Research on the suicidal behavior of incarcerated criminal offenders, especially female criminal offenders, has not been one of the major concerns of suicidology. In view of the paucity of empirical work, the fourth purpose of the present study was to gather information on female prisoners; a population that has been relatively ignored and for whom information on suicidality and general mental health is sadly lacking.

B. Method

Subjects

The sample was comprised of residents at Lakeside Correctional Centre for Women, a provincial jail in British Columbia housing a diverse population of adult female offenders. This medium security institution serves as a remand centre for women both under federal and provincial jurisdiction as well as a prison for women sentenced for less than two years and federal transfer inmates. The total female inmate population at the time of study fluctuated between 42 and 49 (70 percent Caucasian and 30 percent Native Indian), with approximately one-third of inmates having remand status.

Data were obtained from 54 female prisoners, 39 White and 19 Native Indian. It was assumed that the sample represented a heterogenous population of offenders. This group included 40 sentenced individuals (74.1 percent) and 14 individuals with remand status (25.9 percent). Conviction and charge offenses included a full range of criminal offenses from murder to shoplifting. For sentenced women, corresponding sentences ranged from 10 days to 'life', with an average sentence length of 4.5 months. Fully 68.5 percent of the women sampled had previously served a term in prison. The mean number of times in prison for

the present sample was 4.2 (sd=4.3) and the mean aggregate time served was 158.32 days (sd=268.74). Subjects ranged in age from 18 to 58, with a mean age of 30 years (sd=9.2). and a mean educational level of grade 10. Seventy-two percent of the women sampled were unemployed prior to incarceration.

Eight prisoners did not participate for various reasons, including refusals (n=4), change of mind/conflict of schedule (n=2), and illness (n=1). One subject who was not in contact with reality and considered too dangerous to be interviewed was not asked to participate. With these exceptions, the entire population of one provincial facility for women was studied as part of this investigation.

Assessment Measures

Demographic and Descriptive Information

Inmate data were gathered through a nine-page structured interview which was designed to gather self-reported information relating to personal and family background, social milieu, demographic characteristics, criminal history, and program experience of incarcerated offenders. This interview was constructed by Glick & Neto (1977), and used in a study of women's correctional programs in the United States (Glick & Neto, 1977).

Suicidal Behavior

The Suicidal Behaviors Questionnaire (SBQ) (Linehan, 1981) is a survey of suicidal behavior which includes self-reported information on suicidal history, ideation frequency, and suicide likelihood.

Three questions on the SBQ served as suicide indices/criteria because they request information commonly regarded as clinically significant in suicide assessment, and because they offer three different time perspectives of suicidal behavior. One question requested historical reports of suicide ideation and parasuicide, (i.e., Have you ever thought about or attempted killing yourself?) This item was rated on a scale of 0, "No", to 6, "I attempted to kill myself, and think I really hoped to die." (Suicidal History)

A second question assessed frequency of suicidal ideation within the past year, (i.e., How often have you thought about killing yourself within the past year?). This item was rated on a 5-point scale from 0, "Never", to 4, "Very Often". (Frequency of Current Suicidal Ideation)

The third question asked subjects to rate how likely they were to attempt suicide in the future (i.e., How likely is it that you will attempt suicide in your lifetime?). This item was rated on a scale of 1, "No chance at all", to 5, "Very likely". (Predictions of future suicide potential).

Depression

The Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Beck, 1967) is a 21-item self-report inventory which covers a wide range of symptoms associated with depression - affective, behavioral, cognitive, motivational, and physical signs. Each item consists of four statements listed in order of symptom severity and scored on a range from 0 to 3. The range of possible scores extends from 0 to 63, with scores of 0 - 9 being categorized by Beck as not depressed, 10 - 15 as mildly depressed, 16 - 23 as moderately depressed, and 24 - 63 as severely depressed. The reliability and validity of this inventory have been repeatedly confirmed. Specifically, the odd-even reliability has been reported as .86 (Beck et al., 1961), and the test-retest reliability has been reported as .75 after one month (Rehm, 1976) and .74 after 3 months (Miller & Seligman, 1973). The BDI has demonstrated good concurrent validity when compared to psychiatric ratings of severity of depression in both clinical populations ($r=.79$, $n=226$ and $r=.67$, $n=183$) (Beck et al., 1961) and college student populations ($r=.79$, $n=56$) (Bumberry, Oliver & McClure, 1978). The construct validity has been supported by a number of investigations in which the BDI has been used as the criterion measure (Beck & Beamesderfer, 1974). Beck (1972) has also demonstrated the high discriminant validity of the instrument, finding a correlation of .72 between the inventory and clinical ratings of depression

and a correlation of .14 between the inventory and clinical ratings of anxiety.

Hopelessness

The Hopelessness Scale (HS) (Beck, Weissman, Lester, & Trexler, 1974) is a 20-item true-false self-report scale which assesses various manifestations of negative expectancies for the future. The scale is scored in the direction of hopelessness. Each response is assigned a score of 0 or 1, and the sum of scores, which can range from 0 to 20, is the "hopelessness score". The reliability and validity of the HS have been previously reported for the original sample of hospitalized suicide attempters on which the scale was constructed (Beck et al., 1974) and have been recently confirmed for general psychiatric, forensic psychiatric, and college samples (Durham, 1982). Specifically, Beck et al. (1974) analyzed the internal consistency of the scale by means of coefficient alpha (KR-20), and reported a reliability coefficient of .93. Utilizing Kuder-Richardson reliabilities, Durham (1982) provided further support for the reliability of the HS, especially in psychiatric samples ($r=.86$). The HS has demonstrated sufficient concurrent validity when compared to clinical ratings of hopelessness in both a general medical practice sample ($r=.74$, $n=23$) and in an attempted suicide sample ($r=.62$, $n=62$) (Beck et al., 1974). This scale has also shown a relatively high

correlation with other self-administered measures of hopelessness; for example, Beck et al. (1974) reported a correlation of .63 between the HS and the pessimism item of the BDI. The HS correlated more highly with this item than with any of the other items on the BDI. The construct validity has been supported by a number of investigations primarily involving samples of suicide attempters (Beck, Kovacs, & Weissman, 1975; Beck, Weissman, & Kovacs, 1976; Beck et al., 1974; Kovacs, Beck, & Weissman, 1976; Lester & Beck, 1976). Further support for the construct validity of the HS has been provided by Durham (1982).

Social Desirability

Two measures of social desirability were employed: the Edwards Social Desirability Scale (Edwards SDS) (Edwards, 1957), and the Marlowe-Crowne Social Desirability Scale (M-C SDS) (Crowne & Marlowe, 1960).

The Edwards SDS is a 39-item true-false self-report scale designed to measure individual differences in rates of SD responding. The scale is made up of items drawn from various MMPI scales: including the three validity scales, F, K, and L, and the Taylor Manifest Anxiety Scale (Taylor, 1953). The items on the SD scale are all keyed for SD responses. The SD score is based upon the number of SD responses a subject gives in self-description. The corrected split-half reliability for the scale has been reported as .83 (Edwards, 1957).

The M-C SDS is a 33-item true-false self-report scale designed to measure the substantive need for approval. The scale is made up of items based on culturally-sanctioned and approved behaviors which are improbable of occurrence. The CM-SDS was developed in an attempt to avoid the pathology-relevant item content apparent in the ED-SDS. The M-C SDS and the Edwards SDS differ considerably in the amount of content or item overlap with the various MMPI scales. In contrast to the Edwards SDS, the C-M SDS contains only one exact and four approximate replications of L items and one repetition of a K item. The M-C SDS is scored in the direction of social desirability. The higher the subject's score, the greater the person's 'need to look good'. The internal consistency coefficient for the scale, using KR-20 has been reported as .88, and the test-retest reliability has been reported as .89 (Crowne & Marlowe, 1960).

Both scales have been used in a very large number of investigations. The Edwards SDS and M-C SDS have no items in common.

Procedure

The purpose and the nature of the research project was explained to each subject and her voluntary participation was obtained. It was emphasized that participation was strictly voluntary and totally confidential. Subjects were also advised that they could terminate the session at any time, and that

their participation or nonparticipation would in no way affect their period of incarceration. Inmates who agreed to participate were asked to sign a consent form which described the project and the terms of participation.

All 54 subjects were individually administered the measures described above as part of a larger battery. Assessment sessions were divided into two phases: the structured interview followed by the psychometric test battery. Structured interviews lasted approximately 40 minutes. All subjects were cooperative, and no questions were met with refusal. Subjects were instructed to complete the psychometric test battery according to standard instructions.

The research was conducted during the summer of 1984 and completed within eight weeks. Thus it is assumed that the sample accurately reflected the diversity of persons, psychological symptoms, and criminal offences which appeared in the correctional facility for adult female offenders.

Data Analyses

All data analyses were carried out using BMDP statistical software programs (University of California Press, 1983). The aim of statistical analyses were to examine the relationships among depression, hopelessness, social desirability and three suicide indices: past history, frequency of current ideation, and estimated likelihood of future parasuicide. The utility of

depression, hopelessness and social desirability as postdictors of suicidality was of special interest.

Three main approaches were employed to analyze the data. First , in order to examine the interrelationships among suicidality, depression, hopelessness and social desirability correlations and first-order partial correlations were computed. Second, in order to determine whether the interrelationships among these variables could be separated along meaningful dimensions, an exploratory factor analysis of the data was performed. Finally, in order to examine the utility of hopelessness, depression and social desirability as postdictors of suicidality, multiple linear and logistic regressions were performed for each suicide index, using the hopelessness, depression and social desirability measures as independent variables.

C. Results

Preliminary Analyses

For the total sample of women (N=54), the means and standard deviations for the HS, the BDI, the ED-SDS, the CM-SDS, and the three suicide criteria: suicidal history (SBQ1), frequency of current suicidal ideation (SBQ5), and predictions of future suicidal potential (SBQ31), are presented in Table 1.

The mean score on the BDI for this sample was 15.85 (sd=9.54), indicating that the average total BDI score fell within the mildly to just moderately depressed range. The mean HS score was 4.78 (sd=4.05), revealing a general lack of pessimism (cf. Beck, Steer & McElroy, 1982). The mean SBQ1 score was 4.06 (sd=2.26), indicating that the average type of suicidal behavior previously engaged in corresponded to 'past serious ideation.' The mean SBQ5 score was 1.26 (sd=1.44), indicating a low frequency of suicidal ideation during the past year. The mean SBQ31 score was 1.91 (sd=1.26), revealing that the average estimated likelihood of parasuicide in the future was 'unlikely'/'low probability'. The mean score on the ED-SDS for this sample was 23.70 (sd=8.19), which is somewhat lower than the ED-SDS mean for females originally reported by Edwards (1957) (mean= 27.1, sd=6.5). The mean CM-SDS score was 13.89

Table 1

Means and standard deviations for the BDI, HS, CM-SDS, ED-SDS and the three suicide criteria: SBQ1, SBQ5 and SBQ31

MEASURE	MEAN	STANDARD DEVIATION
SBQ1	4.06	2.26
SBQ5	1.26	1.44
SBQ31	1.91	1.36
HS	4.78	4.05
BDI	15.85	9.54
ED	23.70	8.19
CM	13.89	6.40

Suicide criteria:

SBQ1= suicidal history/seriousness of past behavior

SBQ5= frequency of current suicidal ideation

SBQ31= predictions of future suicide potential

N=54

(sd=6.40), which closely approximates the CM-SDS mean originally found by Crowne & Marlowe (1960) for a sample of undergraduate students (mean=13.72, sd=5.78), but which is lower than the CM-SDS means reported for various female prisoner samples (mean=21.41, sd=12.78; mean=19.11, sd=11.39; mean=16.3, sd=6.38) (Crowne & Marlowe, 1964).

Interrelationships Among Measures

In order to examine the interrelationships among suicidality, depression, hopelessness, and social desirability, correlations and first-order partial correlations were computed. The correlations among the variables under consideration are presented in Table 2. The results of the partial correlations are summarized in Tables 3 through 6.

Hopelessness, Depression and Suicidality

Beck has discussed hopelessness as the crucial variable in explaining the well established link between depression and various cognitive aspects of suicidal behavior. Commensurate with Beck's theoretical framework, the patterns of relations among the BDI, the HS, and the three suicide criteria were examined. These relationships are summarized in Table 3.

The correlations between the BDI, the HS, and SBQ1 (past suicide history) were all significant. Hopelessness and

Table 2

Correlation matrix: correlations among the BDI, HS, CM-SDS ED-SDS and the three suicide indexes: SBQ1, SBQ5 and SBQ31

	SBQ1	SBQ5	SBQ31	HS	BDI	ED	CM
SBQ1	1.00						
SBQ5	.45***	1.00					
SBQ31	.36**	.44**	1.00				
HS	.32*	.19	.48***	1.00		52	
BDI	.30*	.32*	.40**	.53***	1.00		
ED	-.33*	-.35*	-.36**	-.55***	-.69***	1.00	
CM	-.34*	-.21	-.33*	-.19	-.26	.47***	1.00

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

N=54

Table 3

Hopelessness, depression and suicidality: summary of partial and corresponding raw correlations

	HS		BDI	
	raw	partialling out BDI	raw	partialling out HS
SBQ1	.32*	.18	.30*	.16
SBQ5	.19	.03	.32*	.26
SBQ31	.48***	.35*	.40**	.20

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

depression correlated at about the same level with the suicidal history criterion. When first-order partial correlations were computed, it was found that the correlation of SBQ1 with the BDI (holding the HS constant) decreased from .30 to .16, which was no longer statistically significant. Similarly, the correlation of SBQ1 with the HS (holding the BDI constant) decreased from .32 to .18 which was no longer statistically significant.

Using the SBQ1 as a criterion measure, it was found that although both hopelessness and depression were positively correlated with past suicide history, hopelessness was not more closely related to this suicide index than was depression. Within Beck's theoretical framework, the relationship between past suicidal behavior and depression was not mediated by hopelessness.

The correlations between the BDI, the HS, and SBQ5 (recent suicide ideation) were not all significant. The positive correlation of SBQ5 and the BDI ($r=.32$) was significant at the .05 level, while the correlation of SBQ5 and the HS ($r=.19$) was not significant. Using Williams' (1959) (cited by Steiger, 1980) test of the difference between two dependent correlation coefficients, it was found that the correlation between SBQ5 and the BDI was significantly higher than that between SBQ5 and the HS ($t(51)=-.94$, $p<.001$). When first-order partial correlations were computed, it was found that the correlation of SBQ5 with the BDI (holding the HS constant) decreased from .32 to .26, which was no longer statistically significant. Similarly, the

correlation of SBQ5 with the HS (holding the BDI constant) decreased from .19 to .03 (nonsignificant).

Using the SBQ5 as a criterion measure, it was found that although the HS and the BDI were positively correlated, depression was a stronger correlate of suicidal ideation than was hopelessness. Previous findings that the HS is reliably related to the extent of current suicidal ideation were not corroborated. Similarly, previous findings that the association between depression and suicidal ideation is primarily due to hopelessness as a mediating variable were not corroborated.

The correlations between the BDI, the HS, and SBQ31 (estimates of future suicide potential) were all significant. The correlation between SBQ31 and the HS was significantly higher than the correlation between SBQ31 and the BDI (Williams' $t=.68$, $p<.001$). When first-order partial correlations were computed, it was found that the correlation of SBQ31 with the HS (holding the BDI constant) decreased from .48 to .35, which was still statistically significant, $p<.05$. On the other hand, the correlation of SBQ31 with the BDI (holding the HS constant) decreased from .40 to .20, which was nonsignificant.

Using the SBQ31 as a criterion measure, it was found that hopelessness was a stronger correlate of estimated likelihood of future parasuicide than was depression. Within Beck's theoretical framework, the relationship between predictions of future suicide potential and depression was accounted for mostly by hopelessness.

Social Desirability, Hopelessness, Depression and Suicidality

Social desirability has been referred to as stylistic tendencies to answer personality items in a direction considered socially desirable (culturally approved) rather than in terms of honest self-evaluation. Linehan & Nielsen (1981) reported a high negative correlation between the HS and the ED-SDS inventory scores. Consequently, they proposed that self-reports of hopelessness are potentially confounded with SD response set, rendering any obtained scores uninterpretable or severely qualified. Petrie & Chamberlain (1983) reported that, although the HS was negatively correlated with the CM-SDS ($p < .05$), SD response set had no influence on self-reports of hopelessness. (Depression, as measured by the Zung Depression Scale, was also unaffected by SD).

Commensurate with the conceptualization of SD as a stylistic determinant of response bias, the patterns of relations among the HS, the BDI, the CM-SDS, the ED-SDS, and the three suicide indices were examined. These relationships are summarized in Tables 4 (for SBQ1), 5 (for SBQ5), and 6 (for SBQ31). These results are presented primarily to facilitate a comparison with the findings of two previous studies, namely: 1) Linehan & Nielsen's (1981) study with a general population sample, utilizing the HS, the ED-SDS, and the three suicide criteria (SBQ1, SBQ5, and SBQ31), and; 2) Petrie & Chamberlain's

(1983) study with an attempted suicide sample, utilizing the HS, the CM-SDS, the Zung Depression Scale (Zung, 1965) and three items from the Suicide Behavior Subscale of the Zung Index of Potential Suicide (Zung, 1974), measuring suicidal ideation. Due to the great number of variables involved in such a comparison, only the relevant differences and similarities among studies are highlighted. Preceding this analysis, however, a portion of Table 4 is explained to enhance further interpretation.

Table 4: Cell One

The HS, the ED-SDS, and the CM-SDS were all modestly correlated with SBQ1; all correlations were significant at the .05 level. When first-order partial correlations were computed, it was found that the correlation of SBQ1 with the HS (holding the ED-SDS constant) decreased from .32 to .18, which was no longer statistically significant. Similarly, the correlation of SBQ1 with the ED-SDS (holding the HS constant) decreased from -.33 to -.20 (nonsignificant). Further computations revealed that the correlation of SBQ1 with the HS (holding the CM-SDS constant) decreased from .32 to .28, which was still statistically significant, $p < .05$. Similarly, the correlation of SBQ1 with the CM-SDS (holding the HS constant) decreased from -.34 to -.30, which was significant at the level of $p < .05$. These results may be compared to Linehan and Nielsen's (1981) findings. Specifically, for a general population sample, these authors found that the correlations between the HS, the ED-SDS,

Table 4

Social desirability, hopelessness, depression and SBQ1: summary of partial and corresponding raw correlations

CELL 1				
	RAW	$r(S,H)=.32^*$	$r(S,E)=-.33^*$	$Lr(S,H)=.26^{***}$
ED-SDS	PARTIAL	$r(S,H.E)=.18$	$r(S,E.H)=-.20$	$Lr(S,H.E)=.12$
HS				
	RAW	$r(S,H)=.32^*$	$r(S,C)=-.34^*$	
CM-SDS	PARTIAL	$r(S,H.C)=.28^*$	$r(S,C.H)=-.30^*$	

	RAW	$r(S,B)=.30^*$	$r(S,E)=-.33^*$	
ED-SDS	PARTIAL	$r(S,B.E)=.11$	$r(S,E.B)=-.18$	
BDI				
	RAW	$r(S,B)=.30^*$	$r(S,C)=-.34^*$	
CM-SDS	PARTIAL	$r(S,B.C)=.23$	$r(S,C.B)=-.28^*$	

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

H=HS B=BDI E=ED-SDS C=CM-SDS S=SBQ1

L=Linehan & Nielsen, 1981 (general population sample, N=180)

and SBQ1 were all significant ($p < .001$). When the first-order partial correlation was computed, it was found that the correlation of SBQ1 with the HS (holding the ED-SDS constant) decreased from .26 to .12, which was no longer statistically significant.

Highlights

To begin this analysis, it is important to note that the well established pattern of a high negative correlation between the ED-SDS and the HS was replicated and extended to the BDI: a marked negative correlation between the ED-SDS and the BDI was observed for the present sample. However, the previous finding of a significant correlation between the CM-SDS and the HS was not corroborated.

Hopelessness, depression and social desirability total scores were examined with respect to past suicidal behavior (see Table 4). Using SBQ1 as the criterion measure, it was found that the positive relationships between hopelessness, depression and past suicidal history dropped to nonsignificant levels when the effects of social desirability (as measured by the ED-SDS) were controlled. These results duplicate, and extend the findings of Linehan and Nielsen (1981) to the BDI. However, at the same time, partialling out either hopelessness or depression also resulted in lowering the strength of the relationship between past suicidal history and the ED-SDS to nonsignificant levels. Partialling out social desirability (as measured by the CM-SDS)

did not significantly change the strength of the relationship between hopelessness and past suicidal behavior, although it did substantially reduce the relationship between depression and past suicidal behavior. Finally, partialling out either hopelessness or depression had no significant effect on the relationship between past suicidal history and the CM-SDS.

Hopelessness, depression and social desirability total scores were also examined with respect to current suicidal ideation (see Table 5). Using SBQ5 as the criterion measure, it was found that when the effects of social desirability (as measured by the ED-SDS) were controlled, the positive relationships between hopelessness, depression, and the extent of current suicidal ideation dropped markedly (to nonsignificance). Partialling out hopelessness did not significantly change the strength of the relationship between ED-SDS and current ideation; however, partialling out depression substantially reduced this relationship. Although these results corroborate Linehan and Nielsen's (1981) findings concerning the hopelessness dimension, it is important to note that these authors found a substantially larger correlation between the HS and SBQ5 ($r=.40$, $p<.001$) than was found for the present sample ($r=.19$, not significant). When the effects of social desirability (as measured by the CM-SDS) were controlled, the positive relationship between depression and the extent of current suicidal ideation was not significantly reduced, while the relationship between hopelessness and suicidal ideation

Table 5

Social desirability, hopelessness, depression and SBQ5: summary of partial and corresponding raw correlations

	ED-SDS	RAW	$r(S,H)=.19$	$r(S,E)=-.35^*$	$Lr(S,H)=.40^{***}$
		PARTIAL	$r(S,H.E)=.00$	$r(S,E.H)=-.30^*$	$Lr(S,H.E)=.16^*$
HS					
	CM-SDS	RAW	$r(S,H)=.19$	$r(S,C)=-.21$	$Pr(S,H)=.43^{***}$
		PARTIAL	$r(S,H.C)=.16$	$r(S,C.H)=-.18$	$Pr(S,H.C)=.46^{***}$

	ED-SDS	RAW	$r(S,B)=.32^*$	$r(S,E)=-.35^*$	
		PARTIAL	$r(S,B.E)=.12$	$r(S,E.B)=-.19$	
BDI					
	CM-SDS	RAW	$r(S,B)=.32^*$	$r(S,C)=-.21^*$	$Pr(I,Z)=.35^{***}$
		PARTIAL	$r(S,B.C)=.28^*$	$r(S,C.B)=-.14$	$Pr(I,Z.C)=.32^{**}$

$p<.05=* \quad p<.01=** \quad p<.001=***$

H=HS B=BDI E=ED-SDS C=CM-SDS S=SBQ5 Z=Zung Depression Scale
I=Suicide Behavior Subscale (Zung Index of potential suicide)

L=Linehan & Nielsen, 1981 (general population sample, N=180)

P=Petrie & Chamberlain, 1983 (attempted suicide sample, N=54)

remained nonsignificant. These results substantiate previous findings by Petrie and Chamberlain (1983) with regard to depression, but are contrary to their findings for hopelessness. Here again, it is important to note that Petrie and Chamberlain (1983) found a substantially larger correlation between the HS and suicidal ideation ($r=.43$, $p<.001$) than was found in the present study ($r=.19$, not significant). Finally, partialling out either hopelessness or depression further reduced the nonsignificant relationship between the CM-SDS and current suicidal ideation.

Hopelessness, depression and social desirability total scores were also examined with respect to subjects' estimates of future likelihood of parasuicide (see Table 6). Using SBQ31 as the criterion measure, it was found that when the effects of social desirability (as measured by the ED-SDS) were controlled, the positive relationship between depression and future suicide potential was markedly reduced, while the relationship between hopelessness and future suicide potential was not significantly affected. These results are contradictory to Linehan and Nielsen (1981), who reported that controlling for ED-SDS markedly reduced the magnitude of the correlation between hopelessness and future suicide potential (from .36 to .26). However, it is interesting to note that this reduced correlation ($r=.26$) was still significant at the level of $p=.001$. From this perspective then, the results of both studies appear similar. Moreover, partialling out either hopelessness or depression resulted in

Table 6

Social desirability, hopelessness, depression and SBQ31: summary of partial and corresponding raw correlations

ED-SDS	RAW	$r(S,H) = .48^{***}$	$r(S,E) = -.36^{**}$	$Lr(S,H) = .36^{***}$
	PARTIAL	$r(S,H.E) = .36^{**}$	$r(S,E.H) = -.13$	$Lr(S,H.E) = .26^{***}$
HS				
CM-SDS	RAW	$r(S,H) = .48^{***}$	$r(S,C) = -.33^*$	
	PARTIAL	$r(S,H.C) = .45^{***}$	$r(S,C.H) = -.28^*$	
<hr/>				
ED-SDS	RAW	$r(S,B) = .40^{**}$	$r(S,E) = -.36^{**}$	
	PARTIAL	$r(S,B.E) = .23$	$r(S,E.B) = -.13$	
BDI				
CM-SDS	RAW	$r(S,B) = .40^{**}$	$r(S,C) = -.33^*$	
	PARTIAL	$r(S,B.C) = .35^{**}$	$r(S,C.B) = -.26^*$	

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

H=HS B=BDI E=ED-SDS C=CM-SDS S=SBQ31

L=Linehan & Nielsen, 1981 (general population sample, N=180)

lowering the strength of the relationship between future likelihood and the ED-SDS to nonsignificant levels. Partialling out social desirability (as measured by the CM-SDS) did not significantly change the positive relationships between hopelessness, depression and future suicide potential. Finally, although partialling out depression substantially reduced the relationship between the CM-SDS and the future likelihood criterion, partialling out hopelessness did not affect the strength of this relationship.

In summary, an examination of the patterns of relations among hopelessness, depression, social desirability and suicidality revealed instances of corroboration and contradiction as well as extensions of previously reported findings.

Suicidality

In order to examine the interrelationships among the three suicide criteria, the relevant correlations were examined (see Table 2).

The correlations between SBQ1, SBQ5, and SBQ31 were all significant. The positive correlation between SBQ1 and SBQ5 ($r=.45$, $p<.001$) was significantly higher than the positive correlation between SBQ1 and SBQ31 ($r=.36$, $p<.01$) (Williams' $t=.69$, $p<.001$). The degree of association between SBQ5 and SBQ31 ($r=.44$, $p<.001$) was also stronger than the degree of association

between SBQ1 and SBQ31 ($r=.36$, $p<.01$) (Williams' $t=-.55$, $p<.001$).

These results indicated that: 1) past suicidal behavior was more strongly related to reports of current suicidal ideation than to subjects' estimates of future suicide potential, and; 2) estimated future suicide potential was more strongly related to the extent of current suicidal ideation than to reported suicidal history. Based on these patterns of relations, it appears that suicidal behavior is not a unitary construct, but rather may better be described as a continuum or spectrum of behavior.

Factor Analysis

In order to determine whether the complex interrelationships among social desirability, hopelessness, depression, and the suicide criteria could be separated along meaningful dimensions, an exploratory factor analysis of these seven variables was performed.

The analysis was accomplished by a maximum likelihood factor analysis (MLFA). As dictated by the residual correlations, a three-factor solution was considered meaningful and was subjected to a varimax rotation procedure.

Unfortunately, the statistical analysis resulted in Heywood cases (communalities equal to or exceeding unity) for two variables, the HS and the ED-SDS; the remaining communalities

were quite low, ranging from .29 to .52. Heywood cases are indicative of a serious problem; they suggest that the basic common factor analysis is suspect. There is a modified factoring technique (Martin & McDonald, 1975) (cited by Koopman, 1978), which is an appropriate treatment for Heywood cases. Although it exists in the literature, a computer program which implements Martin and McDonald's (1975) technique is not currently available. Thus, as executed, the MLFA was invalid and could not be interpreted.

Postdiction of Suicidality

Although it may be useful to examine the interrelationships among hopelessness, depression, social desirability and suicidality in more detail, a sensible alternative approach involves evaluating the utility of hopelessness, depression and social desirability as postdictors of suicidality. Within this framework, social desirability measures are viewed as potentially useful postdictors in their own right, rather than implicit contaminants of hopelessness and/or depression inventories.

With this end in mind, the ability of hopelessness, depression and social desirability (separately, or in combination) to postdict suicidality was examined using two different methods of analysis: 1) multiple linear regression - an ordinary least squares method, and; 2) multiple logistic

regression - a probabilistic method. These statistical analyses were performed for each suicide index (SBQ1, SBQ5, and SBQ31), using total scores on the HS, the BDI, the ED-SDS, and the CM-SDS, as independent variables. Results of the regressions on the suicide criteria are presented in Tables 7 through 15.

Multiple Linear Regression:Ungrouped

In a first attempt to investigate how well hopelessness, depression and social desirability postdicted suicidality, multiple linear regression (MR) analyses were run using the three ungrouped suicide criteria as dependent variables, and the HS, the BDI, the ED-SDS, and the CM-SDS as independent variables (postdictors). As the number of postdictors was relatively small, an 'all subsets regression' program was employed. This program proceeded by calculating all possible regression equations, beginning with all the one-postdictor equations, two-postdictor equations, and so on, until all the postdictors were used in a single equation. As such, this method was well suited for analyzing the collective and separate effects of hopelessness, depression and social desirability on each of the suicide criteria. Tables 7 to 9 are summary tables for each of the ungrouped MR analyses that present the variance explained (adjusted R^2) in each dependent variable by all possible subsets of postdictor variables. The adjusted R^2 is similar to the R^2 , after a correction has been made for the number of variables and

cases. For any particular suicide index then, the postdictive ability of hopelessness, depression and social desirability (separately, or in combination) may be deduced from the corresponding table.

Inspection of Table 7 reveals that for SBQ1, variance accounted for ranged from 7.2 percent to 15 percent. When all four postdictors were entered into a single regression equation, only 12.7 percent of the total variance in SBQ1 was accounted for. The HS/CM-SDS subset was the regression equation that maximized the adjusted R^2 ; 15 percent of the variance in SBQ1 was postdictable from a weighted combination of scores on these two measures. Overall, the most important postdictors of past suicidal history were the CM-SDS, and, to a lesser extent, the HS. In contrast, the BDI and the ED-SDS were less useful postdictors, as they contributed less substantially to the adjusted R^2 .

Using SBQ5 as the criterion measure (see Table 8), the amount of variance accounted for by the all subsets regression ranged from 1.6 percent to 10.7 percent. The four postdictors entered into the single regression equation accounted for only 6.9 percent of the total variance in SBQ5. The ED-SDS regression equation maximized the adjusted R^2 ; 10.7 percent of the variance in SBQ5 was postdictable from scores on this social desirability measure. Overall, the ED-SDS best optimized the postdiction of recent suicidal ideation. In contrast, the HS, the BDI, and the CM-SDS did not make substantial contributions to the adjusted

Table 7

Multiple linear regression performed for SBQ1 (ungrouped) using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	ADJUSTED R2
HS			CM	.150
HS	BDI		CM	.144
HS		ED	CM	.138
	BDI		CM	.132
HS	BDI	ED	CM	.127
		ED	CM	.121
	BDI	ED	CM	.119
HS		ED		.101
			CM	.100
		ED		.093
HS	BDI			.089
HS	BDI	ED		.087
	BDI	ED		.085
HS				.081
	BDI			.072

Table 8

Multiple linear regression performed for SBQ5 (ungrouped) using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	ADJUSTED R2
		ED		.107
	BDI	ED		.101
		ED	CM	.092
HS		ED		.089
	BDI	ED	CM	.087
	BDI		CM	.085
HS	BDI	ED		.084
	BDI			.084
HS		ED	CM	.074
HS	BDI	ED	CM	.069
HS	BDI			.067
HS	BDI		CM	.067
HS			CM	.030
			CM	.026
HS				.016

R².

Inspection of Table 9 reveals that for SBQ31, variance accounted for ranged from 9.2 percent to 26.4 percent. When all four postdictors were entered into a single regression equation, 25.4 percent of the total variance in SBQ31 was accounted for. The HS/BDI/CM-SDS subset was the regression equation that maximized the adjusted R²; 26.4 percent of the variance in SBQ31 was postdictable from a weighted combination of scores on these three measures. Overall, the most important postdictor of future suicide potential was the HS. The CM-SDS, and, to a lesser extent, the BDI and the ED-SDS were all useful postdictors of future suicidality.

In summary, the MR ungrouped analyses suggested that the overall ability of hopelessness, depression and social desirability (separately, or in combination) to postdict suicidality was quite poor. At best, the proportion of variance due to regression ranged from 10.7 percent (SBQ5), through 15 percent (SBQ1) to 26.4 percent (SBQ31). The results of these analyses also suggested that: 1) the optimal regression equations for the different suicide criteria were quite dissimilar, and 2) the social desirability measures were necessary to accomplish such postdiction. Thus, social desirability (as measured by the CM-SDS) and, to a lesser extent, hopelessness, were the most crucial postdictors of historical reports of suicidality. In comparison with past suicidal history, the postdiction of recent suicidal ideation

Table 9

Multiple linear regression performed for SBQ31 (ungrouped) using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	ADJUSTED R2
HS	BDI		CM	.264
HS			CM	.261
HS	BDI	ED	CM	.254
HS		ED	CM	.247
HS	BDI			.229
HS	BDI	ED		.214
HS				.214
HS		ED		.213
	BDI		CM	.183
	BDI	ED	CM	.167
	BDI			.141
	BDI	ED		.141
		ED	CM	.132
		ED		.115
			CM	.092

appeared to be more influenced by the variable of social desirability, as measured by the ED-SDS. Finally, the best postdictor of future suicide potential presented yet another pattern; for this criterion, hopelessness was the postdictor of most importance.

Multiple Logistic Regression

In a second attempt at investigating how well the suicide criteria could be postdicted from hopelessness, depression and social desirability, multiple logistic regression (LR) analyses were run using the three suicide indexes as dependent variables, and the HS, the BDI, the ED-SDS, and the CM-SDS as independent variables. The LR analyses were also performed for another reason: to detect any bias that might have occurred in the ordinary least squares (MR) model. According to the initial MR analyses, hopelessness, depression and social desirability (separately, or in combination) demonstrated a relatively weak association to suicidality, seen postdictively. However, the use of MR to postdict the suicide criteria may have been an error in model specification; that is, specifying the regression as linear when, in fact, it was curvilinear. It may be that the postdiction is better represented by equations with non-linear parameters (LR) than equations with linear parameters (MR).

To assess both the collective and simple effects of the postdictor variables on the three suicide criteria, an 'all

subsets logistic regression' was employed. The LR technique, however, necessarily involves grouped (dichotomous) dependent variables; that is, each dependent variable must be assigned a metric value of 0 ('success') and 1 ('failure'). As opposed to the ungrouped variables, which reflect a condition of 'more or less', the grouped variables reflect a condition of 'either/or'. For each suicide index then, responses were collapsed to form two mutually exclusive categories. For historical reports of suicide ideation and parasuicide (SBQ1), subjects were partitioned into two groups: the absence of past parasuicide (0 - 4) and the presence of past parasuicide (5 - 6). For frequency of recent suicidal ideation (SBQ5), responses were collapsed to form two groups: nonideators (0) and recent/current ideators (1 - 4). Subjects' estimates of future suicide potential (SBQ31) were also categorized into two groups: nonintenders/no chance (1) and intenders/low to high probability of future parasuicide (2 - 5).

Results of the logistic regression on SBQ1, SBQ5, and SBQ31 are presented in Tables 10, 11, and 12, respectively. The LR procedure maximizes the geometric mean likelihood that the postdiction is correct. This maximized likelihood, which is presented in the LR tables, is analogous to an unadjusted R^2 . An analog of the adjusted R^2 is not available.

Inspection of Table 10 reveals that for SBQ1, probability of correct classification ranged from 53.4 percent to 57.1 percent. The four-postdictor equation maximized the average

Table 10

Multiple logistic regression performed for SBQ1 using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	geometric mean liklihood
HS	BDI	ED	CM	.571
HS	BDI		CM	.570
	BDI	ED	CM	.568
HS	BDI	ED		.566
	BDI		CM	.565
HS		ED	CM	.565
	BDI	ED		.564
HS	BDI			.562
	BDI			.558
		ED	CM	.557
HS			CM	.557
		ED		.555
HS		ED		.554
HS				.544
			CM	.534
BASERATE				.517

probability of correct classification; utilizing a weighted combination of scores on the complete set of postdictors yielded a .571 probability of classifying a subject correctly. Overall, the most important postdictor of the reported presence or absence of past parasuicide was the BDI. To a lesser extent, the hopelessness and social desirability measures were also useful postdictors of group membership on this suicide criterion.

Using SBQ5 as the criterion measure (see Table 11), the LR analysis produced probability postdictions ranging from 52.4 percent to 57 percent. When all four postdictors were entered into a single regression equation, the average probability of correct classification was maximized; utilizing a weighted combination of scores on the complete set of postdictors yielded a .570 probability of classifying a subject correctly. Overall, the most important postdictor of non-ideators versus recent ideators was the ED-SDS. To a lesser extent the HS, the BDI, and the CM-SDS were also useful postdictors of group membership on this suicide criterion.

Inspection of Table 12 reveals that for SBQ31, probability of correct classification ranged from 51.2 percent to 62.3 percent. Once again, the four-postdictor equation maximized the average probability of correct classification; utilizing a weighted combination of scores on the complete set of postdictors yielded a .623 probability of classifying a subject correctly. Overall, the most important postdictor of future parasuicide versus low to high probability of future parasuicide

Table 11

Multiple logistic regression performed for SBQ5 using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	geometric mean liklihood
HS	BDI	ED	CM	.570
HS		ED	CM	.569
HS	BDI	ED		.564
	BDI	ED	CM	.564
		ED	CM	.564
HS		ED		.563
	BDI	ED		.560
		ED		.559
HS	BDI		CM	.554
HS			CM	.553
	BDI		CM	.541
HS	BDI			.536
HS				.532
			CM	.527
	BDI			.524
BASERATE				.503

Table 12

Multiple logistic regression performed for SBQ31 using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	geometric mean liklihood
HS	BDI	ED	CM	.623
HS	BDI		CM	.623
	BDI	ED	CM	.620
	BDI		CM	.619
HS		ED	CM	.595
HS			CM	.588
HS	BDI	ED		.588
	BDI	ED		.587
HS	BDI			.583
		ED	CM	.583
	BDI			.580
HS		ED		.568
		ED		.562
			CM	.558
HS				.544
BASERATE				.512

was the CM-SDS. The BDI, and, to a lesser extent, the HS and the ED-SDS were also useful postdictors of group membership on this suicide criterion.

In summary, the LR analyses suggested that the overall ability of hopelessness, depression and social desirability (separately, or in combination) to correctly classify (postdict) group membership (suicidality) was poor. Given the base rates, the complete set of postdictors enhanced classification accuracy by only 5.4 percent (SBQ1), 7 percent (SBQ5), or 11.1 percent (SBQ31). It appears, therefore, that the postdiction of suicidality is not better represented by equations with curvilinear parameters (LR) than equations with linear parameters (MR). Rather, the LR analyses together with the ungrouped MR analyses suggested that the poor utility of hopelessness, depression and social desirability as postdictors of suicidality may be due to intrinsic unpostdictability. The results of the logistic regression analyses also indicated that: 1) the optimal postdictors for the different suicide criteria were quite dissimilar, and; 2) the social desirability measures were necessary to accomplish such postdiction. Thus, depression was the most important postdictor of the reported presence or absence of past parasuicide. In contrast, group membership in either non-suicide ideators or recent suicide ideators was best postdicted by social desirability (as measured by the ED-SDS). Finally, the best postdictors of the estimated presence or absence of future suicide potential presented yet another

pattern; for this dichotomized criterion, social desirability (as measured by the CM-SDS) and, to a lesser extent, depression were the postdictors of most importance.

Multiple Linear Regression: Grouped

In yet a third attempt to examine the utility of hopelessness, depression and social desirability as postdictors of suicidality, additional 'all subsets' MR analyses were performed using the suicide criteria as dependent variables, and the HS, the BDI, the ED-SDS, and the CM-SDS as independent variables. For these analyses, however, grouped (dichotomous) variables were employed; specifically, for each suicide criterion, responses were collapsed to form two mutually exclusive categories as was done for the LR analyses. One reason for completing these supplementary analyses was to determine if the postdiction of suicidality varied as a function of how suicidality was defined and measured. Furthermore, although LR and MR are not directly comparable techniques, a grouped MR analysis facilitated a more valid comparison of these regression procedures. Tables 13 to 15 are summary tables for each of the grouped MR analyses that present the variance explained (adjusted R^2) in each dependent variable by all possible subsets of postdictor variables. For any particular suicide index, the postdictive ability of hopelessness, depression and social desirability (separately, or in combination) may be deduced from

the corresponding tables.

Inspection of Table 13 reveals that for SBQ1, variance accounted for ranged from 4.7 percent to 13 percent. When all four postdictors were entered into a single regression equation, only 11.4 percent of the total variance in SBQ1 was accounted for. The BDI/CM-SDS subset was the regression equation that maximized the adjusted R^2 ; 13 percent of the variance in SBQ1 was postdictable from a weighted combination of scores on these two measures. Overall, the BDI optimized the postdiction of reported absence or presence of past parasuicide.

Using SBQ5 as the criterion measure (see Table 14), the amount of variance accounted for by the all subsets grouped regression ranged from 6.1 percent to 18.3 percent. The four postdictors entered into the single regression equation accounted for 15.9 percent of the total variance in SBQ5. The ED-SDS regression equation maximized the adjusted R^2 ; 18.3 percent of the variance in SBQ5 was postdictable from scores on this social desirability measure. Overall, the ED-SDS best optimized the postdiction of non ideators versus recent suicide ideators.

Inspection of Table 15 reveals that for SBQ31, variance accounted for ranged from 10.3 percent to 27.6 percent. When all four postdictors were entered into a single regression equation, 25.7 percent of the total variance in SBQ31 was accounted for. The BDI/CM-SDS subset was the regression equation that maximized the adjusted R^2 ; 27.6 percent of the variance in SBQ31 was

Table 13

Multiple linear regression performed for SBQ1 (grouped) using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	ADJUSTED R2
	BDI		CM	.130
	BDI	ED		.128
HS	BDI		CM	.127
	BDI	ED	CM	.123
	BDI			.119
HS	BDI			.119
		ED		.118
HS	BDI	ED		.118
HS		ED		.116
HS	BDI	ED	CM	.114
		ED	CM	.110
HS		ED	CM	.110
HS			CM	.097
HS				.073
			CM	.047

Table 14

Multiple linear regression performed for SBQ5 (grouped) using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	ADJUSTED R2
		ED		.183
		ED	CM	.178
HS		ED		.176
HS		ED	CM	.173
	BDI	ED		.168
HS	BDI	ED		.163
	BDI	ED	CM	.162
HS	BDI	ED	CM	.159
HS			CM	.132
HS	BDI		CM	.122
	BDI		CM	.102
HS	BDI			.086
HS				.086
			CM	.074
	BDI			.061

Table 15

Multiple linear regression performed for SBQ31 (grouped) using total scores on HS, BDI, ED-SDS and CM-SDS as independent variables

HS	BDI	ED	CM	ADJUSTED R2
	BDI		CM	.276
HS	BDI		CM	.271
	BDI	ED	CM	.261
HS	BDI	ED	CM	.257
	BDI	ED		.210
	BDI			.210
HS	BDI			.208
HS		ED	CM	.204
HS			CM	.202
HS	BDI	ED		.201
		ED	CM	.191
HS		ED		.161
		ED		.156
			CM	.138
HS				.103

postdictable from a weighted combination of scores on these two measures. Overall, the most important postdictors of no chance of future parasuicide versus some probability of future parasuicide were the BDI, and, to a lesser extent, the CM-SDS.

In summary, the MR grouped analyses suggested that the overall ability of hopelessness, depression and social desirability (separately, or in combination) to postdict suicidality was quite poor. At best, the proportion of variance due to regression ranged from 13 percent (SBQ1), through 18.3 percent (SBQ5), to 27.6 percent (SBQ31). The results of these analyses also suggested that: 1) although the optimal regression equations for SBQ1 and SBQ31 were identical, they differed from the optimal regression equation for SBQ5; moreover, the relative 'crucial' postdictors were quite dissimilar across suicide indexes, and 2) the social desirability measures were necessary to accomplish such postdiction. Thus depression was the most crucial postdictor of reported absence or presence of past parasuicide. In comparison with past suicidal history, the postdiction of non ideators versus recent suicide ideators appeared to be more influenced by the variable of social desirability, as measured by the ED-SDS. Finally, the best postdictors of no chance of future parasuicide versus some probability of future parasuicide presented yet another pattern; for this criterion, depression, and, to a lesser extent, social desirability (as measured by the CM-SDS) were the postdictors of most importance.

A comparison of these supplementary analyses with both the LR and MR(ungrouped) analyses yielded useful information. Observations based on this comparison are summarized below.

Postdiction of Suicidality: Summary

For the purpose of studying the collective and separate effects of hopelessness, depression and social desirability on suicidality, three different regression analyses were performed. When the results of these analyses were compared, four important observations emerged. First, the analyses suggested that hopelessness, depression and social desirability (separately, or in combination) had a relatively weak association to suicidality, seen postdictively. Second, the analyses indicated that, although the independent variables demonstrated poor postdictive ability in an absolute sense, these variables were all relatively important postdictors of suicidality: In other words, hopelessness, depression and social desirability measures were all necessary to accomplish the postdiction objective. Third, the results of the regressions suggested that the optimal postdictors of suicidality corresponded more closely within suicide index than across suicide index; that is, to a certain extent, some postdictors appeared more often for one suicide criterion than for another. Thus for frequency of recent suicide ideation (SBQ5), the results of the regressions were similar in all cases: the ED-SDS continually appeared as the postdictor of

most importance. In contrast, for past suicidal history (SBQ1), both the LR and MR(grouped) analyses nominated the BDI as the best postdictor of group membership; namely, the presence or absence of past parasuicide. Degrees of past suicidality were best postdicted by the CM-SDS, and, to a lesser extent, the HS (MR:ungrouped). The best postdictors of estimated future suicide potential (SBQ31) presented yet another pattern: both the LR and MR(grouped) analyses selected the BDI and the CM-SDS as the most important postdictors of group membership; namely, no probability or some probability of future parasuicide. Degrees of future suicide potential were best postdicted by the HS, and, to a lesser extent, the CM-SDS (MR:ungrouped). Fourth, with the exception of the recent ideation criterion (SBQ5), the postdiction of suicidality varied markedly as a function of how the suicide criteria were defined and measured. As highlighted above, the grouped regression analyses (LR and MR:grouped) designated different independent variables to optimize the postdiction of suicidality, than did the ungrouped regression analysis (MR:ungrouped).

D. Discussion

The general aim of this investigation was the study of the interrelationships among hopelessness, depression, social desirability and suicidality with specific reference to incarcerated women offenders. Several relationships, selected for clinical and theoretical relevance, were separately examined. Of special interest was the practical significance of hopelessness, depression, and social desirability assessments in the prediction of reported past, current, and estimated future suicidal behaviors.

Preliminary Analyses

The preliminary analyses provide a number of interesting and potentially important observations. First, with regard to both hopelessness and depression, the obtained normative data for the women offenders suggest mean scores closely resembling the means reported previously for various drug-dependent individuals studied by Beck and his colleagues (e.g., Beck, Steer, & McElroy, 1982; Emery, Steer, & Beck, 1981). That this sample of female offenders exhibit a general lack of pessimism is an interesting observation in its own right. That these women manifest mild to just moderate depression, however, can be considered somewhat surprising. Given the high prevalence of

many forms of psychological disorder among female criminals (Widom, 1978) together with the high frequency of depression in the adult female population (DSM III, APA, 1980), intuitively one might have expected to find higher levels of depression among incarcerated adult females than were observed. Yet, the findings of the present study may be said to corroborate those of Scott, Hannum, & Ghrist (1982) who reported mild levels of depression for a sample of 65 American incarcerated females, using the abridged BDI. (The abridged BDI is a shortened form of the original instrument; Beck & Beamsderfer (1974) reported substantial correlations, from .89 to .97, between the abridged and full BDI forms).

Second, with reference to Crowne-Marlowe social desirability, the obtained normative data for the women offenders suggest a mean score lower than the means previously reported for various female prisoner groups (Crowne & Marlowe, 1964). Indeed, the present population of female inmates closely resemble a normative sample of undergraduate female students on this social desirability scale (Crowne & Marlowe, 1960). Similarly, with reference to Edwards social desirability, the obtained normative data for the women offenders suggest a mean score somewhat lower than the mean originally reported for non-prisoner females by Edwards (1975). Although these data are somewhat contrary to previous findings, they are not necessarily counterintuitive. Intuitively, one might expect that the tendency to answer personality items in a direction considered

socially desirable (culturally approved) rather than in terms of honest self-evaluation, would be lower among criminal offenders when contrasted with non-prison populations.

Third, with regard to the suicide criteria employed in this study, the data offer a greatly needed descriptive analysis of the suicidal behavior of a female inmate population. For historical reports of suicidal behavior, 63 percent of the present sample admit at least one past parasuicide (27.8 percent "didn't mean to die", while 35.2 percent "hoped to die"); another 13 percent admit to having experienced serious suicidal ideation; and another 5.6 percent admit to having experienced minor suicidal thinking. To the extent that these subject reports are considered reliable, these findings suggest that the base rate for parasuicide among women offenders is disproportionately high when contrasted to non-offender populations. For example, Strosahl, Linehan, and Chiles (1984) found that nine percent of a general population sample and 28 percent of a psychiatric patient sample were reported past parasuicides. Indeed, a past history characterized by parasuicide and/or serious suicide ideation appears to be 'normative' behavior among this population of women offenders. For recent suicide ideation, 22.2 percent of the women studied admit to have experienced suicidal ideation often or very often during the past year. This frequency of recent serious ideation is higher than that previously reported for a general population sample (9.1 percent), and somewhat lower than that reported for

a psychiatric population (35.4 percent) (Strosahl et al., 1984). With regard to estimates of future suicide potential, 27.8 percent of the present sample judge their probability of future parasuicide as moderate to high, while another 11.1 percent estimate this likelihood as low. For future likelihood of parasuicide, the percentage of moderate to high probability cases among this female prisoner sample is similar to that reported previously for psychiatric patients (26 percent) and much higher than that reported for a general population (4 percent) (Strosahl et al., 1984).

In summary then, the population of women offenders under consideration present with: 1) mild to moderate depression; 2) a general lack of pessimism, and; 3) a tendency to attribute to themselves personality statements considered socially desirable (culturally approved) in a manner similar to that of female college students. At the same time these women reveal a past history of serious suicidal behavior characterized by disproportionately high base rates of parasuicide and serious suicidal ideation. Further, this group of women report frequencies of recent suicidal ideation and estimated probabilities of future suicide potential which clearly distinguish them from a general population sample. Together these data suggest that female offenders may aptly be described as a group of individuals at high risk for suicidal behavior.

Hopelessness, Depression and Suicidality

Beck has identified hopelessness as the common factor linking depression and various cognitive aspects of suicidal behavior, including suicidal intent and suicidal ideation. The present study attempted to: 1) replicate the hopelessness hypothesis with a population of female prisoners, and; 2) extend the hopelessness hypothesis to include past and estimated future manifestations of suicidal behavior. An examination of the interrelationships among hopelessness, depression and three indexes of female prisoner suicidality - past history, current ideation and estimated future suicide potential - unveiled several noteworthy findings.

First, with regard to past suicide history, hopelessness was not a stronger correlate of this suicide criterion than was depression. Rather, hopelessness and depression demonstrated near equivalent relationships with historical reports of suicidality. Although the relationship between past suicidal behavior and depression was not significant when hopelessness was controlled statistically, the reverse was also true. Contrary to Beck's hopelessness hypothesis, the relationship between past suicidal history and hopelessness was not significant when depression was statistically controlled. Clearly, the attempt to extend the hopelessness hypothesis to include past manifestations of suicidal behavior was not successful; within Beck's theoretical framework, the

relationship between past suicidal behavior and depression was not mediated by hopelessness. However, it is important to note that neither hopelessness nor depression were particularly meaningful correlates of past suicidality. In this regard, the 'time-bound' or state properties of both the hopelessness and depression measures may have been a problem. Specifically, that reliable measures of state hopelessness or depression were not important indicators of what has happened in the past is not a totally unexpected finding. Indeed, the usefulness of 'time-bound' assessments in research on past suicidality may be quite limited.

Second, with reference to current suicidal ideation, the correlation between hopelessness and frequency of ideation was significantly lower than that between depression and current ideation. Although the relationship between current ideation and depression was substantially reduced when hopelessness was controlled statistically, the reverse was also true. Contrary to the hopelessness hypothesis, the relationship between current suicidal ideation and hopelessness was not significant when depression was statistically controlled. These results do not confirm previous findings that the association between depression and suicidal ideation is primarily due to hopelessness as a mediating variable. However, an important difficulty arises in interpreting this result. This difficulty refers to the discrepancy between measures previously employed to assess the ideation criterion (e.g., the SSI) and the measure

employed in the present study (the SBQ). In contrast to the SBQ, which assesses the frequency of ideation during the past year (recent/current suicide ideation), the SSI inventory appears to be a more global measure of current suicidal ideation; for example the SSI items assess the frequency and duration of suicidal thoughts as well as the subject's attitude toward them; the extent of the wish to die and the wish to live; subjective feelings of control regarding the suicidal ideation; and so on.

At the same time, the patterns of relations obtained herein are noteworthy. Despite the differences in criterion measures employed, it is still surprising that hopelessness per se was not a significant correlate of suicidal ideation in the present study. Indeed, depression was much more closely connected with the extent of recent suicide ideation than was hopelessness. From one perspective, this finding is quite logical. By definition, hopelessness and depression measures refer to different facets of behavior, namely expectations about life in the future as opposed to current symptomatology. Stated in this way, it may be that, at least for a population of women offenders, negative expectancies are less relevant to recent suicidal thinking than are current depressive cognitions. In this regard, it is interesting to note that for a college population, Bumberry, Oliver, and McClure (1978) reported a strong association between scores of 15 and above on the BDI and positive responses to the inventory's item on self-harm, which requests information on current thoughts of suicide.

Together, the data presented suggest that the strong hopelessness-ideation relationship discussed by Beck may not identify a general relationship, but one that may depend on how suicide ideation is defined and measured, and perhaps on specific subject characteristics.

Finally, with respect to estimates of future parasuicidal behavior, although both hopelessness and depression were related to this suicide criterion, hopelessness was a stronger correlate of estimated likelihood of future parasuicide than was depression. Commensurate with the hopelessness hypothesis, the relationship between depression and likelihood of future suicidal behavior was not significant when hopelessness was controlled, while the relationship between future suicidal behavior and hopelessness remained significant when depression was controlled. Within Beck's theoretical framework, hopelessness is a stronger indicator of estimated likelihood of future parasuicide than depression itself. These findings suggest an extension of the hopelessness hypothesis to include future manifestations of suicidal behavior in a population of female prisoners. Admittedly, dealing with future suicide potential as a subject's estimate of future parasuicide likelihood may be an oversimplification. Nonetheless the positive relationship between present hopelessness (as indicated by the HS) and future hopelessness (as reflected by increased future likelihood estimates) is impressive. On the other hand, this finding is not too surprising. That hopelessness, defined

as negative expectancies about life in the future, is closely related to estimated likelihood of future parasuicide has intuitive appeal. Moreover, these data suggest that hopelessness among women inmates, a significant correlate of estimated future parasuicide behavior, may be an important target for therapeutic intervention with this criminal population.

In summary, the patterns of relations obtained herein: 1) do not facilitate an extension of the hopelessness hypothesis to include reports of past suicidality; 2) do not support Beck's contention that hopelessness is more crucial to current suicide ideation than depression in general, and; 3) extend the hopelessness hypothesis to include reported estimates of future parasuicide likelihood. It may be that the incarcerated offender status of the population under study was a significant contributor to these findings. The relative importance of depression and hopelessness to various manifestations of suicidal behavior, especially current and estimated future suicidality, remains a question of some importance.

Social Desirability, Hopelessness, Depression and Suicidality

Recently, there has been an upsurge of interest in the issue of social desirability and its relevance to the measurement of hopelessness and suicidal behavior. Viewing social desirability as a stylistic determinant of response bias, Linehan and associates have asserted that the relationship of Edwards social desirability responding to measures of hopelessness, poses theoretical problems and brings into question the utility of hopelessness in research on suicidal behavior. From a similar theoretical perspective, Petrie and Chamberlain have suggested that the relationship of Crowne-Marlowe social desirability responding to measures of hopelessness has no effect on the significant relationship between hopelessness and various forms of suicidal behavior. Commensurate with the conceptualization of social desirability as a stylistic determinant of response bias, the interrelationships among hopelessness, depression, social desirability and the three female prisoner suicide indices were examined. In order to provide cumulative information, the pattern of relations obtained were compared to previous findings; namely, those of Linehan and Nielson (1981), and; Petrie and Chamberlain (1983).

This comparison disclosed instances of corroboration and contradiction as well as extensions of previously reported

findings. For example, the well-established pattern of a high-negative correlation between Edwards social desirability and hopelessness was replicated and extended to depression, while the previous finding of a significant correlation between Crowne-Marlowe social desirability and hopelessness was not corroborated. A more detailed discussion of the results of this comparative analysis is undeserved. Of far greater importance is a clarification of the statistical technique employed by researchers to examine the relevance of social desirability to the measurement of hopelessness (and depression). This statistical technique, the first-order partial correlation, is a statistical form of control used: 1) to detect spurious correlations, and/or; 2) to study the effects of a variable as it is mediated by another variable (Pedhauzer, 1982). However, it is important to recognize that the partial correlation procedure is not an all-purpose method of control. Its interpretation is dependent on one's particular theoretical model. "...In no case, however, can we judge whether or not it is profitable to eliminate a certain variate unless we know, or are willing to assume, a qualitative scheme of causation" (Fisher, 1958)(cited by Pedhauzer, 1982)

As previously discussed, though Linehan and colleagues contest Petrie and Chamberlain's designation of the Crowne-Marlowe as a measure of social desirability, both groups of investigators share a similar theoretical viewpoint; namely that social desirability is a stylistic determinant of response

bias. Based on this theoretical model, Linehan's research team has interpreted the results of the partial correlation procedure as offering evidence for the possible confounding of the hopelessness measure by Edwards social desirability. However, an equally viable alternative interpretation of social desirability exists; namely that social desirability is an important piece of information not to be treated as style, but rather as a 'substantive' trait, measuring substantive dimensions of personality (McRae & Costa, 1983; Nevid, 1981). From this theoretical stance, the results of the partial correlation procedure are misleading -a distortion of reality. Indeed, within the substantive theoretical framework, the covariation of hopelessness and social desirability is not tantamount to confounding. Thus, the calculation of partial correlations is considered a meaningless pursuit.

Clearly, the role Linehan and colleagues assign to social desirability as a stylistic determinant of response "raises problems of interpretation rather than problems of fact" (Wiggins, 1973). To assert that social desirability response set confounds the content of the hopelessness inventory, thus rendering any obtained scores severely qualified, is simply not an empirical argument. Rather, this assertion is an interpretation placed upon a neutral statistical technique. As such, the argument is a purely verbal one; that is, $A+B$ may $=C$, but not necessarily so. Although, within the realm of self-report measures, it is not possible to separate substance

from style, the position taken here favors a substantive interpretation of the social desirability controversy. On rational-theoretical grounds, it seems conceivable that Beck's theory of hopelessness might lead to the 'prediction' that hopeless individuals would be expected to be less concerned with the social impressions they leave about themselves; that is, to respond in a less socially desirable manner.

Of particular interest in this regard is the notion of social desirability as a suppressor variable. Specifically, commensurate with the view of social desirability as response style, Linehan and associates have also invoked social desirability (as measured by the ED-SDS) as a suppressor variable; that is, a suppressor of variance irrelevant to the 'prediction' at hand. The value of social desirability in this case, is to adjust scores on the independent 'predictors' in order to provide a more accurate 'true' score on the hopelessness dimension. But is it appropriate to view social desirability as a suppressor variable? According to Conger (1974), who offers a revised definition for such variables, "a suppressor variable is defined to be a variable which increases the predictive (postdictive) validity of another variable by its inclusion in a regression equation." Stated simply, a suppressor is a variable which, when included in the regression equation, effects the other variables in the regression system by raising their beta weights. Unfortunately, Linehan's research team have invoked social desirability as a suppressor variable without

providing the relevant beta weights (see Stroschal et al., 1984). As such, an evaluation of their claim is not convenient to undertake. However, the data obtained in the present study clearly negate a suppressor interpretation of social desirability (for both ED-SDS and CM-SDS). Taking the MR (ungrouped) analyses as an example, the inclusion of ED-SDS results in lowering the beta weight of the HS for each suicide criteria examined: from .18 to .11 (past history); from .07 to -.01 (current ideation), and; from .16 to .14 (estimate of future suicide potential). Does this negation of social desirability as a suppressor variable (stylistic view), force a reconsideration of social desirability as a substantive trait? Not necessarily - the answer provided will depend on the strength of one's theoretical orientation.

Clearly, the final chapter on the social desirability controversy has yet to be written. However, to paraphrase George Orwell's famous statement that: "All animals are created equal, but some animals are more equal than others." (Animal Farm, 1945), it can be said that: "All interpretations are statistically equal, but some interpretations are theoretically more equal than others!"

Utility

The examination of the interrelationships among hopelessness, depression, social desirability, and suicidality

served to illustrate the difficulties involved in attempting to disentangle the proportion of style versus substance in a social desirability scale. Rather than examine the social desirability controversy in more detail, a sensible alternate approach involved evaluating the utility of hopelessness, depression and social desirability as postdictors of suicidality. Within this framework, social desirability measures were viewed as potentially useful postdictors in their own right, rather than implicit contaminants of hopelessness and/or depression inventories. For the purpose of studying the collective and separate effects of hopelessness, depression and social desirability on three indices of female prisoner suicidality, three different regression analyses were performed. When the results of these analyses were compared, several important observations emerged.

First, the results of the regression analyses suggested that hopelessness, depression and social desirability (separately, or in combination) had a relatively weak association to suicidality, seen postdictively. Although, the ability of these variables to postdict self-reports of past, current or estimated future manifestations of suicidal behavior was poor, it does not necessarily follow that hopelessness, depression and/or social desirability are theoretically irrelevant to suicidality. Rather, the overall poor postdictive ability of these variables may reflect several different errors in model specification; that is, errors in the theoretical frame

of reference. Among such errors are: 1) the inclusion of irrelevant variables in the regression equation; 2) the exclusion of relevant variables in the regression equation; and 3) the specification of the regression as linear when, in fact, it is curvilinear (Pedhauzer, 1982). In this regard, the LR analyses together with the MR analyses demonstrated that the postdiction of suicidality, as defined in the present investigation, was not better represented by equations with curvilinear parameters than equations with linear parameters. As such, it may be that hopelessness, depression, and social desirability are not all relevant to suicidality, or it may be that this particular set of postdictors is incomplete. Perhaps the theoretical frame of reference requires modification to incorporate other, potentially relevant variables.

On the other hand, the poor utility of hopelessness, depression and social desirability as postdictors of suicidality may have been due to intrinsic unpostdictability. Indeed, even as regards female prisoners, individuals suggested to be at high levels of risk, the postdiction of suicidal behavior did not meet reasonable standards of precision. Not only do we not possess the tools to reliably predict particular suicidal acts before the fact, but it may be that we do not possess the tools to reliably assess what has happened in the past ('postdict') or what is happening currently ('paradict').

Second, although the regression analyses indicated that hopelessness, depression, and social desirability (separately,

or in combination) demonstrated poor postdictive ability, in an absolute sense, these variables were all relatively important postdictors of suicidality. In other words, depression and social desirability, and to a lesser extent hopelessness, were all necessary to accomplish the postdiction objective. Of particular interest in this regard, is that the optimal postdictors of suicidality varied markedly as a function of how the suicide criteria were defined and measured. Indeed, with the exception of the recent ideation criterion, the grouped regression analyses designated different variables to optimize the postdiction of both past suicide history and estimated future parasuicide likelihood than did the ungrouped regression analyses. Admittedly, this finding may have been the result of the small sample size employed. However, that the results of the regression analyses varied so markedly as a function of such a 'trivial' change in coding, is more likely reflective of the multi-dimensionality of suicidal behavior. It appears that suicidal behavior is not a unitary construct, but rather may be better described as a continuum or spectrum of behavior. As such, one must not view different forms of suicidal behavior as simply differences in degree of suicidal intent. Rather one must view each manifestation of suicidal behavior as a phenomenon on its own; each associated with a diversity of actions and a range of ideation. Comparing individuals on the basis of a history characterized by the absence of parasuicide versus the presence of parasuicide may be too broad a distinction. Researchers in

the area of suicidal behavior must be more cautious when defining and measuring suicidal behavior.

Third, another interesting finding of these analyses was that some postdictors appeared more frequently than others overall. For example, an examination of the results of the regression analyses revealed that the selection of hopelessness as an optimal postdictor of past, present, or future suicidal behavior was surprisingly infrequent. On the other hand, the social desirability measures were always necessary to accomplish the postdiction objective. In addition, it was found that some postdictors tended to appear more often for one suicide criterion than for the others. For example, with regard to frequency of recent suicide ideation, the results of the regressions were similar in all cases: the ED-SDS continually appeared as the postdictor of most importance. In contrast to the ED-SDS, the CM-SDS appeared as the most important postdictor of either past suicidal behavior or estimated future suicidality in at least one regression analysis. That the two social desirability scales appear to be better postdictors of different indices of suicidal behavior is interesting, but perhaps not too surprising. We are reminded of Strosahl et al.'s (1984) proposal that since the CM-SDS measures the tendency to lie or engage in deliberate image manipulation, it is not really a measure of social desirability at all. Whether or not one chooses to accept this particular interpretation of the CM-SDS, it does seem to be the case that the two 'social desirability' scales are measuring

'different things.' What might these differences be?

Although, on the basis of a multiple regression analysis, no absolute statement can be made about a postdictor's meaningfulness and effectiveness from a theoretical frame of reference, one can speculate. If, for instance, we define the ED-SDS as a state measure and the CM-SDS as a trait measure, then the results of the regression analyses 'follow naturally.' That is, the ED-SDS, being more responsive to state personality variables or factors might be expected to be a better postdictor of current suicide ideation than the CM-SDS. On the other hand, the CM-SDS, being a measure which taps more enduring stable personality variables (character), might be expected to be a better postdictor of both past and estimated future suicidality than the ED-SDS. Admittedly, this tautological argument is only one of many available interpretations of the data. Schwartz (1983), for example, has found the CM-SDS to be quite a good measure of defensiveness or 'repressive coping style.' The ED-SDS, on the other hand, has been construed as both a measure of anxiety (Wiggins, 1973) and as a measure of psychological adjustment (Nevid, 1981; McRae & Costa, 1983). Even within the 'stylistic camp' there exists controversy over the definition of social desirability - it seems that not all social desirability scales are created equal!

Clearly, the psychological meaning of social desirability responding is still a matter of considerable theoretical debate. Regardless of their true meaning, both the ED-SDS and the CM-SDS

have appeared as relatively useful postdictors of various manifestations of suicidality. Does this finding force a reconsideration of social desirability as a substantive trait? For those in the 'stylistic camp', likely not. Nonetheless, the data in the present study suggest that 'social desirability' measures should be studied in their own right as potentially useful variables, rather than implicit stylistic contaminants of personality measures.

Conclusions

The present study investigated the interrelationships among suicidality, depression, hopelessness, and social desirability in the context of a female prison population. As part of this inquiry, several relationships, selected for clinical and theoretical relevance, were separately examined. The utility of hopelessness, depression and social desirability as postdictors of reported past, current, and estimated future suicidality was of special interest. Several conclusions based on the results of this investigation are summarized as follows:

1. The data presented herein strongly suggest that incarcerated female offenders may aptly be described as a group of individuals at high risk for suicidal behavior. These women reveal: 1) a past history of serious suicidal behavior characterized by disproportionately high base rates of parasuicide and serious suicidal ideation, and; 2) frequencies

of recent suicidal ideation and estimated probabilities of future suicide potential which clearly distinguish them from a general population sample.

2. The present investigation demonstrated that the relative importance of depression and hopelessness to various manifestations of female prisoner suicidality is unclear. Although not necessarily negating previous observations that hopelessness may be an important factor in suicidal behavior, the patterns of relations reported herein bring into question the generalizability of Beck's model of suicidal behavior. It may be that the strong hopelessness-suicide relationship discussed by Beck does not identify a general relationship, but one that may depend on how suicidal forms of behavior are defined and measured, and on specific subject characteristics. Perhaps hopelessness is too global a construct: Specifically, are the cognitive components of hopelessness the same in offender versus non-offender populations?

3. The data presented herein neither support nor contradict the proposal that self-reports of hopelessness are potentially confounded with social desirability response style. However, a commentary on the partial correlation procedure served to illustrate that this proposal is a purely verbal argument; it is merely an interpretation placed upon a neutral statistical technique. An equally plausible alternative is that social desirability measures represent substantive dimensions of personality, and that hopeless individuals might well be

expected to respond in a less socially desirable manner. From this theoretical stance, the calculation of partial correlations is an invalid application of the technique. As a point of interest in this regard, the findings of the present investigation clearly negated the 'stylistic' interpretation of social desirability as a suppressor variable.

4. The results of several different analyses demonstrated that, even in an apparently high risk group, the overall ability of hopelessness, depression and social desirability (separately, or in combination) to postdict suicidality was poor. Clearly, some of the inherent difficulties involved in the assessment and prediction of suicidal behavior apply equally well to our efforts at postdiction; namely, the multidimensionality of suicidal behavior and the 'time-bound' (state) nature of assessments. These results do not necessarily imply that hopelessness, depression, or social desirability are theoretically irrelevant to suicidality, but rather that we must continue our search for more relevant variables to be added to the 'postdiction equation.' Finally, as suggested by the present data, 'social desirability' measures should be incorporated in this search as potentially useful postdictors in their own right, rather than implicit contaminants of personality measures.

Directions for Further Research

1. This study claims recognition only as a beginning of an effort to cast light on the suicidality of female criminal offenders. Clearly, future research efforts should be directed towards elucidating the psychological factors involved in suicidal behavior among this group of women. Such efforts will also allow us to identify those factors, if any, that discriminate between male and female prisoner suicidality, and to contrast these findings with those observed in the general population. That is, it must be recognized that 'conventional' differences in the suicidal behavior of men and women in the context of non-prison populations, might not apply in the same manner to a population of prisoners.

2. The variables which were measured in the current investigation were preselected for inclusion on the basis of their theoretical and clinical relevance to suicidality. Clearly, continued intensive study of Beck's hopelessness hypothesis is deserved. However, it is also presumed that other, perhaps as yet unidentified, variables might be important. Motto (1974) emphasizes a factor frequently ignored in research on suicide; that is, the assessment of strength as well as psychopathology. Perhaps more attention should be given to the question of whether suicidal persons lack important adaptive characteristics present among nonsuicidal individuals.

3. Although study of the many theoretic and clinical aspects of suicidal behavior may never be an exact science, we must persist in research efforts to supplement our clinical and intuitive judgement. Ultimately, increased clinical utility rests on future research.

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