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Assessment of anger, and negative affect as they relate to
the prediction of criminal violence in a federal inmate
population: A retrospective study.

By

James E. Muirhead, B.A.H., M.A.

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree
of Doctor of Philosophy.
Department of Psychology

Carleton University

Ottawa, Canada

December, 1997

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Submitted by
James E. Muirhead, B.A.H., M.A.

in partial fulfilment of the requirements
for the degree of Doctor of Philosophy

Chair, Department of Psychology

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Carleton University
December, 20, 1997

Abstract

The present study investigated the relationship between negative affect and anger, and criminal violence in a federal inmate sample. The study also compared the postdictive accuracy of anger and negative affect with actuarial style indices of anti-social orientation.

Two models of anger and aggression: Novaco's Cognitive model and Berkowitz's Cognitive - Neoassociationistic model, were compared. No differences between the two models were evident in the questionnaire results. The two models were assessed by eight recently developed self report questionnaires, six of which have not been used previously with an inmate sample. None of the questionnaires or their subscales were related to the presence of criminal violence. The only exceptions were the physical aggression scale of the Buss Perry Aggression Questionnaire and the physical aggression factor derived from the same questionnaire. Both postdicted a history of criminal violence. When they were included in a discriminant function with the actuarial indices, physical aggression scales increased the accuracy of grouping inmates as violent or not. Also, all the scales except for Need for Reparation were significantly related to the actuarial indices.

Three main conclusions were derived from this study. First, the use of self report questionnaires was found to be inappropriate to assess differences in the models under question. Second, federal inmates represent a unique population and questionnaires developed for general or non-criminal population may not be appropriate with this population. Finally, the significant relationships with the anger and antisocial indices indicate that anger may be part of the anti-social personality.

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INTRODUCTION

A growing concern held by the general public is that violent crime has put their personal safety at risk. Media coverage and political agendas have contributed to society's fear of victimization. This has led to an outcry for longer sentences for new violent offenders and preventative detention for those already convicted for violent offenses. However, the proposed prolonged detention of those individuals considered dangerous is not a new phenomenon (Loza, 1989; Monahan, 1981). Also, attempts to assess and predict the dangerousness of an individual have a long past and probably a long future (Steadman, 1987). Controversy marks this history on both ethical and practical grounds (Monahan, 1981). Steadman (1980, 1987) argues that current predictions of dangerousness tend to over estimate the risk for future violent acts. This creates an ethical dilemma when decision makers use the prediction of dangerousness to prolong the detention or confinement of potentially violent individuals. Andrews and Bonta (1994) agree that legislated and proposed legislative "doomsday" actions that sanction criminal and civil confinement, present serious threats to individual rights and freedoms. The ethical dilemma between the rights of the individual and the protection of society as a whole demands further investigation into the prediction and definition of dangerousness.

What is dangerousness? Steadman (1980) argues that dangerousness consists of two core concepts. First is the perception of what is dangerous by the evaluator that is not specific to the evaluatee. Second is the probability that the evaluatee will commit a specific violent act. "Thus the essence of dangerousness is that it is a perception and a prediction" (Steadman, 1980, p. 85). It is this latter concept that dangerousness implies a probability statement about an individual's proneness to violent behaviour, that the literature reflects (Loza, 1989; Monahan and Steadman, 1994; Vasil, 1987). However, Monahan (1981) considers dangerousness an ambiguous term that should be avoided in favor of terms such as violent behaviour or simply, violence. Violent behaviour is in turn defined as the forceful infliction of physical injury (Blackburn, 1993) and grave harm (Vasil, 1987). Criminal violence, then, is the illegal use of force (Blackburn, 1993).

Monahan (1981) includes the use or threat of force that is likely to result in injury in his definition of criminal violence. The term "likely" is an important concept in this definition. It refers to behaviour where the intent to cause physical injury is present, although no actual injury results. An example, individual A tries to shoot individual B but misses: the intent was to harm, but, lack of ability prevented the desired results. Although there appears to be

some consensus in what constitutes dangerousness or criminally violent behaviour (Blackburn, 1993; Monahan, 1981; Vasil, 1987), some authors articulate concern over the measurement or identification of criminal violence (Otto, 1994; Vasil, 1987). More will be said about selection criterion variables used to identify criminal violence in a subsequent section.

Dangerousness, then, in the criminal justice field is the assessment of the probability an individual presents to commit future violent crime, for example robbery with violence, assault or murder. Monahan's (1981) review of the literature found that most studies were unable to predict future violent behaviour beyond a 40% accuracy level. More recent studies report similar results in high risk populations for violent recidivism (Hanson, Steffy, and Gauthier, 1992; Harris, Rice, and Quinsey, 1993; Serin, 1991). Criminal violence is an extremely low frequency phenomenon and this low base rate translates into over prediction of cases at risk (Steadman, 1987). This over prediction includes a statistical category labeled false positives. Predicting that an individual is dangerous when the individual is not would be an example of a false positive. The main thesis of Steadman's (1987) argument is that the individual has a right not to be misclassified as a false positive. Another statistical category of concern is

false negatives. This refers to the identification of an individual as not being dangerous when, in fact, the individual does commit a violent act. These are the type of cases that achieve significant media attention and drive public opinion calling for longer and harsher sentences for the criminally violent. Current public opinion, media attention and political agendas are implicitly tolerant of false positives, but, clearly intolerant of false negatives.

Numerous authors have pointed out that current assessment methodologies offer limited success in the prediction of violent behaviour (Monahan, 1984; Monahan and Steadman, 1994; Otto, 1994; Steadman, 1987). These methodologies use actuarial information that includes demographic and criminal history information, details of the incident offense, and personality factors such as remorse and empathy, as predictor variables for future violent behaviour. The methodologies lack a strong theoretical basis (Novaco, 1994; Quinsey, 1995). Alternatively, Novaco and others (i.e., Berkowitz, 1983; Weiner, 1985; Zillman, 1973) have proposed emotionally based models of anger and aggression to explain and predict violent behaviour. The overall focus of this thesis is to examine the relationship between emotions, in particular anger and negative affect, and criminal violence.

The following literature review begins with a brief comparison of clinical and actuarial approaches to violence risk prediction and discusses recent developments in violent risk prediction rating scales. Next, the lack of effectiveness and consistency of measures of individual differences in predicting violent behaviour is reviewed. A summary of emotional models of anger and aggression with emphasis on Novaco's (1994) and Berkowitz's (1983, 1990) models is presented. This is followed by an introduction to a series of new self-report instruments that were developed from these models and a discussion of the relationship between negative affect and criminality. From this the hypotheses are developed.

Violent Risk Prediction

Monahan's (1981) monograph was the first major treatise on the prediction of violent behaviour for the purpose of involuntary confinement in either mental health institutions or forensic institutions. In this monograph Monahan openly questions the ability of mental health professionals to predict future violent behaviour. The response to Monahan's monograph was quick and widespread. Civil rights groups claimed that psychiatrists and psychologists cannot predict violent behaviour (Monahan, 1984). Monahan observes "rarely has research been so uncritically and so facilely generalized by both mental health professionals and lawyers

as was this first-generation research on the prediction of violence" (1984, p. 10). Furthermore, Monahan suggests that predictions of violent behaviour based on demographic information, past violent behaviour, and current violent acts can better predict future violence than mental health professionals' clinical judgment based on extensive interview and psychometric testing.

Clinical Vs Actuarial Violence Risk Prediction

Monahan's (1981) conclusion that clinical violence risk predictions result in errors in over two thirds of the cases is based primarily on a review of five major studies. Three of these studies were retrospective in nature. They assessed the performance of individuals released by court orders who were previously determined by clinicians as being dangerous (Cocozza and Steadman, 1976; Steadman and Cocozza, 1974; Thornberry and Jacoby, 1979). These studies indicated that less than 20% of the released dangerous individuals committed further acts of violence. The other two studies assessed sane offenders referred for diagnosis and treatment as dangerous offenders (Kozol, Boucher, and Garoflo, 1972; Steadman, 1987). Each study contained a group of dangerous individuals who were released although the clinicians' recommendations were to remain hospitalized. Thirty-eight percent and 41% of these groups committed violent offenses, respectively. Kozol et al. interpret their results as

supportive of clinical predictive of future violent behaviour. However, Monahan argues that it is inappropriate to base decisions of involuntary confinement on error rates as high as two out of three.

Williams and Miller (1977) investigated what characteristics influenced clinical violence risk prediction. They report that the criminal history of the individual significantly affected ratings of dangerousness. Steadman and Cocozza (1978) analyzed 257 psychiatric reports completed for fitness to stand trial hearings. The attending psychiatrist rated 60% of the cases as dangerous. The only variable that was statistically significant in differentiating dangerous from non-dangerous defendants was the current alleged offense. Quinsey and his associates (Quinsey and Cyr, 1987; Quinsey and McGuire, 1986) draw similar conclusions from their investigations into what factors influence clinicians in determining the dangerousness of offenders. It would appear that mental health professionals are using historical and current offense information to base their clinical judgment of dangerousness without the rigor normally associated with actuarial prediction models.

Actuarial methodologies use demographic and criminal history information, details of the incident offense, and personality factors such as remorse and empathy, as

predictor variables for future violent behaviour. Monahan (1981) bases his prediction model on six predictors: past crime, age, sex, race, socioeconomic status and employment stability, and opiate or alcohol use. Others (Klassen and O'Connor, 1994; Loza, 1989; Vasil, 1987) define a wider scope of historical variables that are statistically predictive of future violent behaviour. Some of these variables are childhood problems, problems at school and school achievement, age that the individual left the parental home, and presence of a diagnosis of personality disorder, among many others. Harris et al. (1993) identified in the literature 42 variables statistically related to future violent behaviour. Klassen and O'Connor (1994) maintain that past criminal patterns are the most predictive of future violent offending. However, Holland, Holt and Beckett (1982) argue that offense history may predict future general recidivism, but not future violent offending. Andrews and Bonta (1994) and Gendreau, Little and Goggin (1996) argue that dynamic variables are as good as or better than static historical variables at predicting future criminal behaviour.

Serin and Amos (1995), using an actuarial type rating scale, report false positive rates of 65% for their high risk group, similar to that reported by Kozol et al. (1972). This raises the question: do actuarial type predictions

actually outperform clinical predictions of violent behaviour? Steadman (1980) reviewed the literature of prediction of violent behaviour and concluded that statistical (actuarial) prediction of violence is superior to clinical predictions. Grove and Meehl (1996) describe clinical prediction as lacking in consistency in applying weights to information and combining those weights in a standard predictive equation. Thus, it is the processing of the information, not the information, that makes for less accurate predictions by clinical methods than statistical methods of prediction.

Holland, Holt, Levi and Beckett (1983) present one of the few studies that made both clinical and statistical predictions of recidivism with adult offenders. Statistical predictions were based on the Salient Factor Scale that is a scale based on nine criminal history and social stability items. The clinical predictions were based on a 2 month stay at a diagnostic facility where extensive interviews, file reviews and psychometric testing were completed. The clinical prediction was the result of a consensus between a mental health professional and a correctional case worker based on predetermined criterion variables. Another unique aspect of this study was the use of six criterion measures of recidivism. The measures ranged from general recidivism to incarceration for a violent offense. The results indicate

that as the level of violence became more specific, for example, incarceration for a violent offense, the clinical predictions became more accurate and outperformed the actuarial prediction. The results are consistent with the Grove and Meehl (1996) position that standardization of assessment techniques improves prediction.

Some authors argue that better predictions of future violence may result from a combination of clinical and actuarial assessments. Toch (1980) suggests that static variables are a class of predictors that contribute to violence and that clinical judgment interprets the interaction of these predictors with the individual's situation. Webster, Harris, Rice, Cormier, and Quinsey (1994) propose the use of a recently developed actuarial type rating scale with a semi-structured clinical interview as a method of improving the accuracy of predictions of violent behaviour. Similarly, Monahan and Steadman (1994) argue that models of violence prediction should be based on violent cues (actuarial variables), clinical judgment (incidental offense), and criterion behaviour (situations).

Summary

Actuarial violence risk prediction is a probability statement about the potential of future violent behaviour or likelihood of that behaviour. Clinical violent risk prediction implies a value judgment by the mental health

professional. The individual is perceived as dangerous or potentially violent. It would appear that clinical evaluations and actuarial evaluations access the different core concepts of Steadman's (1980) description of dangerousness.

Many of the studies reviewed reported on subjects who were either patients with health problems or inmates of secure mental health hospitals. The following section provides a brief review of actuarial type prediction instruments applied to offender populations and criminally violent behaviour.

Risk Prediction Rating Scales

Salient Factor Scale

The Salient Factor Scale consists of nine criminal history and social stability items that yield a composite score that ranges from zero to eleven. Low scores indicate a greater risk of failure on release. The scale was developed as a decision making tool for the United States Parole Commission. Holland et al. (1983) found the Salient Factor Scale was able to predict future parole failure and general recidivism, however, it was unable to predict future violent failure with any degree of accuracy.

Statistical Information on Recidivism Scale

The Statistical Information on Recidivism Scale (SIR, Nuffield, 1982) was developed to assist the National Parole

Board of Canada (NPB) with the parole decision making process. The SIR was based on a statistical analysis of variables that were identified as contributing to the parole decision. The resulting scoring system was able to predict risk for general recidivism. However, the system was found to be ineffective at predicting violent recidivism.

Correctional Services of Canada (CSC) adopted this framework in the mid 1980's. CSC reversed the scoring so that higher scores are predictive of better release outcome rather than lower scores. Hann and Harman (1992a) reconfirmed the predictive accuracy of the SIR scale for general recidivism with Canadian federal inmates but, in a subsequent, report were as unsuccessful as Nuffield in predicting future criminal violence (Hann and Harman, 1992b). However, some recent investigations report a modest relationship between the SIR scale and violent criminal behaviour. Rowe (1995) found a correlation of $r = -.24$ ($p < .001$) for violent recidivism in a sample of provincial parolees. Bonta, Harman, Hann, and Cormier (1996) observed a correlation of $r = .20$ ($p < .001$) between the SIR scale and violent recidivism in a major review of over 3000 released Canadian federal inmates.

Level of Service Inventory - Revised

Andrews developed the Level of Supervision Inventory in response to a need for effective supervision of a large

number of probationers (Andrews, Kiessling, Mickus, and Robinson, 1896). Andrews and Bonta's (1995) current version has been renamed the Level of Service Inventory - Revised (LSI-R). The theoretical orientation of the LSI-R is based on risk and need principles. Briefly, the risk principle is based on two premises. The first is that criminal behaviour can be predicted. The second premise is the concept of matching the level of treatment service to the level of risk the offender represents (Andrews and Bonta, 1994). The need principle is the identification of the criminogenic needs of the offender. Criminogenic needs are dynamic and changeable. As the criminogenic needs change the probability of recidivism change also (Andrews and Bonta, 1994). The LSI-R is a checklist completed from interview and file information.

Research indicates that the LSI-R is relatively successful in predicting probation outcome and general recidivism rates (Andrews and Bonta, 1994, 1995). Unfortunately, much of the predictive work completed with the LSI-R has been on probationers and offenders serving relatively short sentences. Loza and Simourd (1994) reported reliability and validity results for the LSI-R on an inmate population serving considerably longer sentences that were equivalent with published results. They also found that individuals convicted of violent offenses had higher total

LSI-R scores than non-violent offenders. Until recently data were not available to demonstrate that the LSI-R can discern between future criminal violent behaviour and future non-violent criminal behaviour. Rowe (1995) reports a modest but significant correlation ($r = .34$, $p < .001$) between LSI-R scores and violent reoffending in a large sample of provincial parolees¹ with a 1 year follow up period.

Psychopathy Checklist - Revised

In his classic book, *The Mask of Sanity*, Cleckley (1982) describes an amoral, irresponsible and impulsive individual with no remorse, shallow affect and a high potential for violence. This clinical conception is commonly referred to as psychopathy. Hare (1990) used Cleckley's description as a basis for the development of a rating scale for the assessment of psychopathy in male forensic populations: The Revised Psychopathy Checklist (PCL-R). The completion of the rating scale requires trained personnel who use extensive file reviews and in-depth interviews to complete the scale. Factor analysis of the items reveals a two-factor solution. The first factor identifies personality type variables and the second identifies behavioural type variables. The scale has been used in a wide variety of venues and found to be an accurate measure of the clinical concept of psychopathy (Meloy, 1988).

¹ provincial parolees are serving sentences of less than 2 years.

The PCL-R can predict release outcome. Hart, Kropp and Hare (1988) identified three groups of offenders based on PCL-R scores: non-psychopathic 0-17, mixed 18-29, and psychopathic 30-40. Release success was found to be related to group placement by the PCL-R. The psychopathic group had more difficulties and violated parole conditions more often than the mixed and non-psychopathic groups. The criterion variable in this study was general parole failure; the study did not look at predicting violent acts. Serin (1991) reports that psychopaths as identified by high scores on the PCL-R had more violent convictions and a higher percentage of violent convictions than non-psychopaths, although the total number of convictions for each group did not differ. Serin also reports that the psychopathic group had more convictions for the use of threats and weapons than the non-psychopathic group. Serin interprets these results as indicating that personality functions as defined by the PCL-R may assist in predicting future violent behaviour. Serin and Amos (1995) report the results of a study on PCL-R predictions of future criminal behaviour. Offenders were classified into three groups, according to Hart et al. (1988), on the basis of their PCL-R score. The follow-up period on release varied with a maximum of 7.8 years, with an average of 5.5 years. The psychopathic group (those with scores of 30 or more) had higher recidivism rates than the

other two groups and reoffended at a faster rate than the other groups. Of those offenders who reoffended the psychopathic group committed a higher percentage of violent offenses. Serin and Amos (1995) conclude that "the PCL-R is a valid predictor of violent recidivism in an incarcerated sample"(p. 4). However, they report a false positive rate of 65% for the psychopathic group: 2 in 3 identified as high risk for violent criminal behaviour did not commit a violent act. The criticism leveled by Monahan (1981) at Kozol et al. (1972) that it is inappropriate to base confinement decisions on such high error rates, seems to also apply to this study. This brief review of the literature using the PCL-R and its relationship to recidivism serves to demonstrate that the PCL-R, like the LSI-R, is able to differentiate between high and low risks for general recidivism and to a lesser extent violent criminal behaviour. Salekin, Rogers and Sewell (1996) advise caution with the use of the PCL-R. They base this conclusion on the atheoretical nature of the PCL-R, the arbitrariness of the cutoff scores, and the lack of evidence of the generalizability of the PCL-R beyond white male prisoners.

The Statistical Violent Risk Appraisal Guide

Harris, et al. (1993) report the development of an instrument that predicts future violent behaviour: The Statistical Violent Risk Appraisal Guide (VRAG). A large

sample of forensic mental health patients and other dangerous offenders referred to a psychiatric facility for diagnostic assessments served as their population for the scale development. Forty-two variables were identified in the literature as statistically predictive of future violence. They were analyzed by a stepwise discriminant analysis that resulted in a 12 variable solution that included PCL-R score, alcohol use and sex of victim. The 12 variables identified were then assigned weights in a similar fashion to Nuffield (1982) to maximize the predictions of the discriminant equation. The authors report that there was a certain amount of capitalization on chance in the selection of the best weights for the variables. The scale predicts a greater likelihood of violent offending with higher total scores. The period at risk for the sample varied to a maximum of seven years and an overall violent recidivism rate of 31% was observed. The recidivism data confirmed the scale's prediction: higher scores were associated with a greater incidence of violent recidivism. It would appear that an additive model based on variables related to violent offending is predictive of future violent behaviour. The VRAG's reliability and validity has recently been demonstrated with non-psychiatric adult male inmates (Glover and Bernfeld, 1997; Loza and Dhaliwal, 1997),

supporting Harris et al.'s (1993) claim that their results are generalizable to other offender populations.

Although Harris et al. (1993) report an overall multiple R of .459 for the full scale, the majority of the variance accounted for is derived from two variables. The PCL-R score, and separation from parents before age 16, achieve a multiple R of .406, thus raising questions about the remaining ten variables that add only .053 to the multiple R. A second criticism leveled at the VRAG is the atheoretical nature of the variables (Nussbaum, 1994). Given the position on prediction defined by Grove and Meehl (1996), this seems a mute point.

Summary

The brief review presented above has demonstrated that actuarial models in forensic psychology so far have been able to predict general recidivism with some accuracy. However, when these models are applied to future criminal violence their success rate is not as accurate. Nussbaum (1994) questions the use of actuarial prediction methods for future violent behaviour that requires a previous history criminal or violent behaviour. In principle, these actuarial measures do not help to identify a first time violent offender. Nussbaum argues that predictive models of future violent behaviour need to account for this first violent offense. Violence is often due to transitory psychological

states that interact with atypical circumstances (Holland et al., 1982). Monahan (1981) also comments that individual characterological differences and situational variables may contribute to violent behaviour. Actuarial models fail to account for individual differences in response to situations. The next section will briefly review attempts to predict violent behaviour from personality inventories and other measures of individual differences.

Measures of Individual Differences

Personality Inventories

Personality has been defined as a cluster of characteristics that are stable over time and consistently influence dealings with life. Andrews and Bonta (1994) list personality and temperamental factors such as psychopathy, and impulsiveness, among the major factors that contribute to criminal conduct. However, attempts to predict criminal violence with personality inventories have been equivocal at best.

Minnesota Multiphasic Personality Inventory

Traditional predictions of violent behaviour from personality inventories have depended on the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway and McKinley, 1967). The MMPI is a personality assessment tool developed from clinical descriptions of diagnostic categories of mental illness. It was originally published in

1943 and revised as the MMPI-2 in 1989 (Butcher, Dahlstrom, Graham, Tellegen and Kaemer, 1989). One major offender classification system attempted to identify homogeneous groups of offenders on the basis of their MMPI profiles (Megargee and Bohn, 1979). They identified ten offender types, five violent types and five non-violent. Megargee and Bohn argued that their classification system could predict future violent recidivism. However, Moss, Johnson and Hosford (1984) in a longitudinal comparison of offenders in the violent and non-violent typology clusters failed to support the prediction of future violence by typological classification.

Other authors have investigated the MMPI anti-social personality profile (48:84 two point code, Graham, 1990) and its relationship to violent recidivism (Henderson, 1983; Ingram, Marchioni, Carvero-Ramos, and McNeil, 1985; Lothstein and Jones, 1978). The collective results did not support predictions of violent criminal behaviour based on the MMPI profile. Langevin, Ben-Aron, Wortzman, Dickey, and Handy (1987) also failed to obtain group differences on MMPI profiles among murderers, non-homicidal assaulters, and non-violent offenders. Considerable personality pathology, as identified by the MMPI, was reported for all offender groups (Ingram et al., 1985; Langevin et al., 1987). Although the MMPI has been used extensively in corrections and forensic

psychology, its ability to predict future violent behaviour has not been demonstrated.

Basic Personality Inventory

The Basic Personality Inventory (BPI; Jackson et al., 1989) is another personality assessment instrument that is also theoretically derived from concepts of psychopathology. Test construction of the BPI was based on multivariate techniques for item analysis. The result is a psychometrically sound inventory consisting of 240 true-false items. Direct comparison with the MMPI in measuring the presence or absence of each clinical symptom measured favored the BPI (Helmes and Barilko, 1988). Studies with juvenile offenders have demonstrated that the BPI can differentiate between first offenders and repeat offenders, and can predict recidivism (Jaffe, Leschied, Sas, Austin, and Smiley, 1985; Leschied, Austin and Jaffe, 1988). Analyses indicate that the reoffending group had higher BPI scores on alienation, impulsivity, feelings of persecution and conflictual interpersonal relationships. Recently, preliminary findings in a longitudinal prospective study on Canadian federal inmates has found high scores on the BPI alienation scale predictive of future offending (Palmer, 1995). The BPI alienation and impulsivity scales have also been found to predict institutional maladjustment (Mills and Forth, 1997). There appears to be an indication that the BPI

may be able to assist in the prediction of future misconduct. Unfortunately, the studies did not address prediction of violent misconduct.

Multidimensional Personality Inventory

Caspi et al. (1994) reports on the results of a longitudinal study in New Zealand and a cross sectional study in the USA. They report delinquency is positively related to aggression and alienation subscales of the Multidimensional Personality Inventory (MPI: Tellegren, 1982 cited in Caspi et al., 1994) and negatively related to traditionalism and control. The general negative emotionality and less constraint found by Caspi et al. is similar to the results reported above with studies using the BPI. However, Caspi et al. note that an early predisposition to delinquency does not necessarily correlate to future adult crime.

Personality and Violent Prisoners

Shoham, Askenasy, Rahav, Chard, and Addi (1989) investigated the psychological factors associated with violent Israeli prisoners. Prison officials identified violent and non-violent prisoners for the study. The authors administered to each prisoner a large battery of psychometric tests (11), including personality inventories. They compared the psychometric profiles with standard dependent variables of number and types of criminal

convictions. The results were inconclusive. The authors also collected details from police and court records on all the violent offenses committed by their violent sample. Factor analysis of the variables produced a four-factor solution. The first factor, labeled planned violence, accounted for 30% of the variance. It included variables such as profit motivation, previous planning and calm behaviour. The second factor labeled impulsive violence accounted for 23% of the variance. It included variables such as increased physical harm, non-instrumental motivation and violence triggered by situational factors. The other factors contributed negligibly and were dropped from the study. The results with this set of dependent variables indicated that there are differences in personality profiles between the planned violent and the impulsively violent offender. Personality variables that seem to highlight this difference were anxiety, extroversion and emotional stability.

Other terms used to describe this dichotomy of violent behaviour are affective versus instrumental violence (Berkowitz, 1983) and affective versus predatory violence (Meloy, 1994). The aim of predatory or instrumental violence is to achieve a single goal and it lacks an emotional investment (Meloy, 1994; Rule and Nesdale, 1976; Serin, 1991). The aim of affective violence is to injure a target (Rule and Nesdale, 1976). It is more spontaneous and often

more extreme than instrumental violence (Berkowitz, 1983; Meloy, 1994). The emotional motivation driving the violent behaviour differentiates affective from instrumental violence or aggression (Berkowitz, 1983). Offender populations are a heterogeneous group of individuals. Subdividing the population according to convictions for violent offenses does not sufficiently reduce the heterogeneity of violent offenders. Shoham et al.'s (1989) study demonstrated that homogeneity of violent offenders may be achieved by subdividing them on the factors of planned/instrumental and impulsive/affective violence. Thus the heterogeneity of violent offender groups, especially concerning Motivation for Violence, may have contributed to the inconclusive results reviewed above.

Buss Durkee Hostility Inventory

One of the more frequently used questionnaires with offenders is the Buss Durkee Hostility Inventory (BDHI) which was published in 1957 (Buss and Durkee, 1957). The BDHI is a 75 true-false item scale with a reported two-factor solution: Aggressiveness and Hostility. Buss and Perry (1992) relate that "researchers can therefore discover not only how aggressive a person is but also how the aggression is manifested" (p. 452). Lothstein and Jones (1978) found that the BDHI was able to differentiate between high and low assaultive group: high assaultive groups had

higher total scores and higher scores on irritability and suspicion sub-scales. Renson, Adams, and Tinklenberg (1978) were also able to differentiate violent alcoholics from non-violent alcoholics on the BDHI. The main differences occurred on total score and on the assault, irritability, and resentment sub scales. However, Syverson and Romney (1985) failed to find differences between violent and non-violent offenders except on the assault sub-scale. Lang, Holden, Langevin, Pugh, and Wu (1987) also failed to differentiate violent and non-violent inmates with the BDHI. More recently Loza (1991) also reports that the BDHI was unable to discriminate between violent and non-violent adult male prisoners. It would appear that the results using the BDHI are equivocal.

The use of anger inventories with offender populations to predict proneness to violence occurs rather sparingly. Selby (1984) reports that anger scales can discriminate between violent and non-violent inmate groups. However, Selby used an extreme group design basing group membership on staff assessments of violence. Although Selby provides some support for the discriminant abilities of anger inventories including the BDHI, there was no indication of how predictive his discriminant function was for future criminal violence. Another study that used an extreme group design (Gembora, 1986) found no differences on criminal

record variables other than age of first conviction between high anger and low anger groups, although the high anger group had higher scores on psychometric assessments of anger that included the BDHI.

The equivocal results found for the BDHI and the inability of anger inventories to discriminate between offender groups may be a result of dependent variables considered. The choice of dependent variables or criterion variables clearly affected the results of Shoham et al.'s (1989) study. Selection of criterion variables, it may be remembered, affected the accuracy of actuarial and clinical predictions of violent recidivism (Holland et al., 1983). Also, Serin and Amos (1995) report varying degrees of predictive accuracy for the PCL-R when the definition of what constitutes a violent crime is modified. The papers that supported the BDHI's ability to discriminate between violent and non-violent individuals based their ratings of violence on a life long history of violent behaviours (Lothstein and Jones, 1979; Renson et al., 1979). Those studies that did not support the BDHI discriminant ability, based their ratings of violence on convictions for violent crimes (Lang et al., 1987; Syverson and Romney, 1985). It would appear that there is some evidence to indicate that criminal histories alone may be an inappropriate criterion

variable for the assessment of the accuracy of predictive variables.

Summary

This brief review identified two possible confounds for the lack of consistency in the results; selection of the criterion variables and heterogeneity of violent samples. Otto (1994) also raised the issue of the selection of criterion variables as a major confound that affects accurate comparisons of results. The design of the present study will address criterion issues. Offender motivation in heterogeneous violent samples is also not taken into account by researchers. Meloy (1988, 1994) and Serin (1991) argue that for some offenders violence is just another behaviour they use to get what they want. For other offenders, however, violence is the result of a highly emotional state. The emotion commonly held to be the motivator toward violence is anger (Berkowitz, 1983; Meloy, 1988, 1994; Novaco, 1976, 1986, 1994; Rule and Nesdale, 1976). The following sections provide a general review of some of the theoretical models of anger and aggression.

Models of Anger and Aggression

Anger has been conceptualized as an emotion, a personality trait, and a behaviour (Spielberger, Reheiser, and Sydeman, 1995). Anger can be adaptive or non-adaptive (Averil, 1982; Novaco, 1976). Aggression or aggressive

behaviour can be emotionally driven (affective) or purposeful (instrumental) and it need not be related to anger or be necessarily harmful (Blackburn, 1989). Concomitantly, violence or harm to others does not necessarily result from aggression, although it has been reported in the literature that violence is used interchangeably with aggression (Kennedy, 1992; Spielberger et al., 1995). Anecdotal evidence supports a hypothesis that much interpersonal violence is motivated by anger. Yet empirical evidence indicates that anger is neither sufficient nor necessary for aggression or violence (Blackburn, 1989; Kennedy, 1992; Novaco, 1976, 1986, 1994). The lack of a direct causal association between anger and violence has led a number of researchers to propose numerous theoretical models to explain the processes that mediate emotional arousal: anger, and behavioural response: violence. The following section reviews some of these models.

Social Learning Theory

The intent of Bandura's (1983) social learning theory of aggression is that "a complete theory of aggression must be sufficiently broad in scope to encompass a large set of variables governing diverse facets of aggression, whether individual or collective, personally or institutionally sanctioned" (Bandura 1983, p. 1). Social learning is the

growth process that allows an organism to develop and function within its social and cultural milieu. The basic tenets of social learning are observational learning and modeling. This leads to the development of memory scripts that cue future behaviour. The social learning theory of aggression postulates that these scripts serve a dual purpose: first to cue the individual to situations requiring aggressive behaviour and, secondly, to serve as controls of the aggressive behaviour expressed. Uncontrolled aggression occurs when the self-regulatory mechanisms intrinsic in social learning theory disengage relative to provocative situations. The implied social and cultural modulation of aggression has been demonstrated in children and non-human species (Lore and Schultz, 1993). Societal differences reflect cultural acceptance and attitudes towards aggression, whereas individual differences reflect biological, psychological and social factors that affect all learning. The social learning explanation of aggression is a cognitive-behavioural global explanation of the expression and control of aggression in a social context. Aggression, then, is a learned behaviour in response to situational and societal cues. One criticism of this model is the neglect of the effect of moods, in particular anger, on aggression (Kennedy, 1992).

Emotion as a Social Construction

Different from the social learning theory, Averil (1982) presents a social constructionist view of emotion. He defines emotion as socially constituted syndromes that refer to emotions as transitory social roles or series of behaviours. For Averil emotion is defined as reflective of past, present and future events. It has an intentional object, and conveys meaning according to social rules. The function and meaning of emotion are therefore determined by the social context of the event. Averil uses anger as an example of his theoretical position on emotion because anger is readily adaptable for primary analysis on a social level. Anger is defined "as an organized set of responses to certain kinds of provocation" (p. 144). Anger may be expressed in numerous ways of which aggression is just one. Anger, as with all emotions, is a form of social interaction based on an internalized set of rules, thus a transitory social role. Averil's view of anger as a normal conflictive emotion, especially in social interactions, is interesting. However, Novaco (1994) criticizes Averil's model because it does not deal with anger as a psychological disturbance and express concern over the model's clinical utility.

Arousal/Attributional Models of Anger

Anger has been linked to aggression through sympathetic nervous system arousal referred to as emotional arousal (Ax,

1953; Zillman, 1983). Rule and Nesdale (1976) found that emotional arousal only facilitated aggression in the presence of aggressive cues. They found that attributes of the source of the arousal, for example provocative or non-provocative, determine the extent of the aggression. Similarly, Zillman and Bryant (1974) report that residual arousal from non-anger producing situations has to be associated with provocation before it affects aggression. Zillman (1983) discusses the relationship between arousal and aggressive behaviour as a two factor model; a cognitive process factor and an excitation process factor. They are considered independent. Zillman argues that arousal alone does not lead to aggressive behaviour. The provocation that has led to the increased arousal is analyzed by the cognitive process and the response to the provocation is mediated accordingly. However, Zillman cautions that "at extreme levels of arousal the cognitive mediation of behaviour is expected to be greatly impaired" (p. 94).

It was also reported that for arousal to influence the level of aggression, the arousal has to be labeled as anger (Konecni, 1975). Likewise, Weiner (1985) ascribes this labeling process as an attributional framework of emotion. Feelings arise from the individual's perception of an event. The attributional model of anger implies that to be angered

by an unpleasant event the individual needs to perceive the event as intentional.

Betancourt and Blair (1992) report that anger is a mediating determinant of aggressive behaviour. Tests of a cognitive mediation model of aggression with an offender sample supported the model (Welsh and Gordon, 1991). However, a solution based on trait anger and a self report arousal index fit the data as well as the cognitive mediation solution. Welsh and Gordon conclude that situational factors "in conjunction with individual cognitions, arousal, and trait disposition - will significantly affect aggressive behaviour" (p. 142). Beliefs and attitudes have also been found to be related to the use of violence in an offender sample (Ford, 1991).

In summary, anger intensity is related to emotional arousal and anger expression is dependent on cognitive mediation. Cognitive mediation includes a number of processes such as identification of the source of arousal, labeling of the arousal, and appraisal of courses of action according to social learning and personality traits (attitudes and beliefs).

Novaco's Model

Novaco's (1976) concept of anger is "predicated on the idea that emotional states are defined or determined by one's cognitive structuring of a situation" (p. 1124).

Cognitive structuring is the individual's cognitive appraisal and interpretation of events. This is central to Novaco's model of anger. Events that are seen as provocation give rise to anger. The intensity of the emotion is dependent on the cognitive appraisal of stimulus or provocation cues, personality traits of the individual, situational determinants and expectation of the individual. Novaco argues that the association of anger with hostility and aggression has "blurred" recognition of anger's adaptive functions. He states "the energizing, expressive, discriminative and potentiating functions make it clear that anger can have very beneficial effects" (1976, p. 1125). Novaco (1986) reaffirms this position by indicating that only rarely do everyday anger instigations lead to overt aggressive acts. He argues that anger as an emotion-action complex shares the properties of an affective stress reaction. Like other stress reactions, anger is generated by external or internal demands or stressors. Conceptualizing anger as a stress reaction to provocation has proven to be an effective paradigm in treating chronic anger problems. Novaco speculates that the application of the stress concept to anger may help in our understanding of the long term effects of anger especially in association with heart disease.

In his recent writings Novaco (1994) addresses the issue of using anger assessment tools in predicting violence. He maintains that anger is a normal emotion and even intense anger need not be dysfunctional; however, anger may also be quite destructive. Furthermore high levels of anger have been found to be related to increases in assaultive behaviour of psychiatric in-patients. The failure of current anger assessment instruments, including his own, to predict this relationship is largely due to the lack of theoretical grounding and the "ad hoc" nature of test construction. Novaco, like Spielberger et al. (1995), conceptualizes anger as having three domains; cognitive, arousal and behavioural. The construction of his revised anger inventory, the Novaco Anger Scale (NAS) is based on these domains with the proviso that "the arousal of anger is cognitively mediated" (p. 35).

The NAS consists of two parts, A and B. Part A assesses Novaco's three conceptual domains of anger with four sub-scales per domain as follows: Cognitive domain with sub-scales measuring attentional focus, suspicion, rumination and hostile attitude; Arousal domain with sub-scales intensity, duration, somatic tension and irritability; and Behavioural domain with sub-scales impulsive reaction, verbal aggression, physical confrontation and indirect expression. Part B is an assessment of anger intensity and

generality across provoking situations and contains five sub-scales: disrespectful treatment, unfairness-injustice, frustration-interruption, annoying traits and irritations. Concurrent validity ranges from .80 to .91 with other anger inventories such as the BDHI and has recently been verified with an inmate sample (Mills, Kroner and Forth, 1997). Predictive validity data for the NAS is provided for a sample of mental health inpatients. The revised NAS outperformed the BDHI in the prediction of future assaultive behaviour. Also, NAS had higher correlations with criminal histories of violent offenses in the sample than the BDHI. Novaco concludes that the revised NAS may assist in the prediction of risk for violent behaviour, especially for the mentally disordered person.

Novaco's (1976, 1986, 1994) model of anger as a stress reaction is in essence a cognitive behavioural model in the Lazarus tradition (DeLongis, Folkman, and Lazarus, 1988; Folkman and Lazarus, 1988; Lazarus, 1974, 1991; Lazarus and Smith, 1988) that intentionally excludes the consideration of biology and affect in the explanation of behaviour. The application of the cognitive model to aggression and violence has been criticized for its lack of attention to the varying effects of mood (Kennedy, 1992). However, one cognitive model of aggression, the Cognitive-Neoassociationistic Analysis of Aggression (Berkowitz,

1990), attempts to incorporate an intricate model of emotion into the concept of aggression.

Berkowitz's Model

Berkowitz (1983, 1990) notes that besides aversive events like provocation and frustration, unpleasant emotions like sadness, depression and grief, as well as noxious environmental conditions can give rise to anger and angry aggression. A general theoretical model of anger and angry aggression must therefore also account for all sources of anger. Berkowitz's Cognitive-Neoassociationistic Analysis of Aggression combines the central nervous system perceptual and cognitive processing of Leventhal's (1980, 1984) perceptual-motor theory of emotion with his own "neobehaviourist position stressing associationistic processes" (1983, p. 109) to accomplish this. The main postulate of the model is that the basic source of anger is negative affect and the model "attempts to spell out the relationship between the initiating negative affect and the resulting angry feelings" (1990, p. 496). Given the importance of Leventhal's theory of emotion in Berkowitz's formulation of affective processing, it will be briefly described before moving on to a more complete discussion of the neoassociationistic model.

Perceptual-Motor Theory

The development of Leventhal's (1980, 1984) perceptual-motor theory of emotion relies on information processing theory that attempts to determine perceptual processing of events at various stages with rules of integration. Leventhal's model is under the umbrella of a general theory that postulates two parallel systems of behaviour. One system explains objective or problem-solving behaviour, while the other system explains emotional or affect-oriented behaviour. Both systems are arranged in three stages; representing the environment, responding to it and testing the response. The aim of the perceptual-motor theory of emotion is to explain the mechanisms that generate emotional experience and expression as representative stage processes.

There are four basic organizing principles in Leventhal's model: multiple routes of activation, meaning domains, simultaneous action, and hierarchical-processing. Briefly, multiple routes of activation mean that any level of the model can activate the emotional process. The concept of meaning domains refers to specific content areas that contain emotional memories attached to that specific domain. Activation of a specific meaning domain, the recall of a memory, will activate the emotions integrated with it. Simultaneous action indicates that all central nervous system hierarchies are active in an emotion provoking

situation. Finally, hierarchical-processing refers to the body's central nervous system's hierarchical organization of peripheral responses of the body and a hierarchical central processing system. The latter system includes three levels of processes; expressive-motor, schematic and conceptual.

The three levels of the central processing systems are fundamental to the structure of the model. Leventhal (1984) describes expressive-motor processing as a system that is innate. It is operative at birth and specific emotional responses are keyed to situational cues. Leventhal considers the stimulus specificity of the expressive-motor systems important for emotional communication and the development of emotional schemata. Emotional schemata are integrations of perceptual codes with the associated emotional experience and represent an analog memory of the emotional experience itself. Schematic processing is the processing of new experience with existing memories to produce the ongoing emotional experience. Leventhal postulates that schematic processing is automatic and represents precognitive operations. Conceptual processing may be considered the cognitive processing of emotions. In Leventhal's model conceptual processing serves two functions. The first function draws conclusions about feelings and causes of emotions or beliefs that "are based on information gleaned from sensory-motor and schematic processing" (p. 141). The

second function is regulatory, providing controlling attention and voluntary actions of emotions. Conceptual processing includes both a verbal and a performance component.

Contrary to other theorists such as Averil (1982) and Bandura (1983), Leventhal argues that primary emotional meaning is the result of an innate sensory-motor structure and not social learning. Emotional meaning is stored in memory as schemata and conceptual memories. The recording of these memories is not a random process and the elicitation of subsequent emotion is dependent on this prior coding. The interactions of the sensory-motor, schematic and conceptual processes are asymmetrical and serve an anticipatory function that Leventhal describes as his "feed forward" hypothesis. This hypothesis is a reformulation of the feedback mechanisms proposed by cognitive arousal theory (Zillman, 1983) that suggests peripheral input mediates emotional responses. Leventhal postulates that the sensory-motor processing system activates and modifies the peripheral responses based on the central interactive mechanisms. Although the mechanisms suggested by Leventhal are speculative, the processes and their interaction are part of a complex model of emotion that explains most of the observed characteristics of emotion and emotional behaviour. And he speculates that his model "may help us to understand

how social factors shape the way individuals feel, express, and conceptualize their affects" (p. 171).

In Berkowitz's (1983,1990) model frustration, provocation, depression, sadness, jealousy, hate among are representative of negative affect. Berkowitz postulates that the expressive-motor processing of negative affect gives rise simultaneously to at least two sets of reactions: one is to escape from the unpleasantness (i.e., the flight response); and the second is to attack the source of agitation (i.e., the fight response). These processes are highly automatic and happen precognitively. The strength of either process is believed to be related to biology, learning and situational demands as expressed in the emotional schematic processing level of Leventhal's model. Berkowitz argues that associative links between negative affect and feelings, ideas and memories of anger and between negative affect and aggressive tendencies develop at this stage of processing. Likewise precognitive self regulatory mechanisms that inhibit angry expression also develop at this stage. Thus negative affect can lead to angry aggression in predisposed individuals, individuals whose biology, learning or situation primes them for expression of their anger, without the necessary involvement of cognitive mediation or attribution of blame common to most cognitive attributionist theories of aggression.

The emphasis of the model on the associative processes occurring at a precognitive level does not rule out the involvement of higher order processing. Cognitive processing develops attributions and expectations. Also, cognitive activity can increase or decrease the negative affect by directing attention toward or away from emotionally laden memories. Higher order processes are also associated with the control and elicitation of anger expression. Berkowitz (1990) postulates that cognitive assessments of rewards or punishments for behaviour can enhance or suppress the behaviour. However, as noted earlier, the model does not require cognitive intervention to explain anger and angry aggression.

Recently a meta-analysis of gender differences in aggression concluded that the results are in general agreement with Berkowitz's model (Bettencourt and Miller, 1996). However, direct tests of hypotheses derived from Berkowitz's (1983, 1990) model are limited. Dill and Anderson (1995) investigated the Berkowitz hypothesis that aggressive inclination results from aversive events that give rise to negative affect. Three levels of frustration were studied as the adverse effect. They found that frustration, whether justified or not justified, produced an inclination to aggress, whereas the no frustration condition did not produce aggression. The authors conclude, "Negative

affect, to some degree, spontaneously primed cognitions associated with aggressive tendencies and established some amount of hostile inclination toward the experimenter".

Another Berkowitz hypothesis, that negative life events help shape or mediate aggression and that the resulting negative affect changes over time, was investigated by Felson (1992) in a two part study. The first part involved a cross sectional analysis of three adult samples, ex-offenders, ex-mental patients and the general population. The results support the hypothesis of negative life events mediating aggression. The second part was a longitudinal study of high school students. The effects of anger and negative affect on aggression changed with time as hypothesized from the model. It was also observed that the effects of negative affect changed over time for other behaviours like delinquency. This again would be in agreement with the learning process built into the model along with the associationistic processes.

Bushman and Green (1990) predicted from Berkowitz's model that "individual differences in aggressiveness interact with the presence of violent stimuli in the elicitation of related aggressive thoughts, emotional states and action tendencies" (p. 157). They conducted two experiments with undergraduate psychology students to assess this hypothesis. They first presented subjects with video

tapes of pre-rated violent content and recorded the number of violent thoughts generated in response to the video. The number of violent thoughts generated by the subjects was positively related to the level of violence in the video and to higher Irritability scale (Caprara et al., 1985) scores. The second experiment used an extreme group design based on high and low scores on another Caprara scale: Emotional-Susceptibility (Caprara et al., 1985). While subjects were exposed to pre-rated violent videos they were required to complete a self report hostility index and record violent thoughts generated by the video. As in the first experiment, violent thoughts were positively related to level of violence in the video and level of Emotional-Susceptibility. Hostility ratings were also positively related to Emotional-Susceptibility as well as a third Caprara scale: Dissipation-Rumination (Caprara, 1986). The results are interpreted as support for Berkowitz's contention that aggressive thoughts and violence are mediated by individually developed associationistic links between thoughts and situational cues.

Support for Berkowitz's model can be derived from research with female offenders, with family violence and with newlyweds. Recently, Loucks (1995) reported that female offenders with histories of physical abuse perpetrated more institutional violence than non-abused prisoners. These

results can be interpreted as supporting the associative postulate that the current situation (incarceration) with associative links to prior emotional memories (physical abuse) intensified the response (institutional violence).

Spouse assault research also provides additional support for a negative affect model of violence. Margolin, John, and Gleberman (1988) recruited husband and wife couples without a reported history of domestic violence. They found that the speed of appearance and amount of negative affect displayed in verbal communication between couples were related to the level of violence in the relationship. Also, they observed that the most abusive husband group also reported more sadness, fear, anger, feeling attacked and being more physiologically aroused than other husband groups. The wives of this group also displayed more of these same negative feelings and behaviours. Although the results are discussed in terms of communication styles in abusive relationships, the presence of negative affect in the most violent couples, both observed and self reported, is supportive of Berkowitz's model. Similarly, Maiuro, Cahn, Vitaliano, Wagner, and Zegree (1988) found that a sample of domestically violent men not only scored higher on anger and hostility scales, but also reported higher levels of depression. Jealousy as well as depression were found to be related to violence in one sample of wife

beaters (Saunders, 1992). He also reported that another sample scored high on Alexithymia, indicating difficulty in verbally expressing and distinguishing their emotional states. Both of these studies have linked negative affect with angry violence.

Undergraduates and newly married couples provided the sample pool for Buss's (1989) investigation into the evocation of anger and upset. Although he was investigating conflict between men and women, his finding that anger could be elicited by a number of situations that produced negative affect support Berkowitz's model.

Thus the model has received some general and specific support from a number of sources. In addition Edmonston and Conger (1996) argue, as a result of a meta-analysis on treatment efficacy of anger problems, for the use of the Berkowitz model as a theoretical base for the development of treatment programs. Still, the functionality of the model will depend on its predictive validity. Unlike Novaco (1994) Berkowitz has not developed an anger inventory directly from his model. However, others recent psychometric developments are related to his model and are summarized briefly in the next section.

Self Report Instruments

The Aggression Questionnaire

Buss and Durkee's (1957) report on the development of their Hostility Inventory (BDHI) demonstrates a remarkable intuitive insight into the clinical picture of hostility. Seven subclasses of hostility were identified: assault, indirect hostility, irritability, negativism, resentment, suspicion, and verbal hostility. After careful analysis the final 75 item inventory was constructed that included an eighth scale called guilt. Factor analysis revealed a two-factor structure labeled attitudinal component of hostility that includes the resentment and suspicious scales, and the motor component that includes the assault, indirect hostility, irritability and verbal hostility scales. Interestingly, three of the motor component scales; indirect hostility, irritability and verbal hostility descriptions include the term negative affect.

Although the BDHI remains popular and widely used, Buss and Perry (1992) cite three reasons; inconsistency of factor structure, the true false response format, and poor placement of items on scales, that indicate updating of the inventory. The Aggression Questionnaire (BPAQ, Buss and Perry, 1992) is the new questionnaire developed from this analysis of the BDHI. Buss and Perry created a new pool of 52 items to reflect the components of aggression as outlined

in the original Hostility inventory. Some items were taken directly from the original inventory, some were rewritten, and others were created. After a series of exploratory and confirmatory factor analysis the final four-factor 29-item version was developed. The four factors or scales are physical aggression with nine items, verbal aggression with five items, anger with seven items, and hostility with eight items. Scales intercorrelations range from .25 to .48.

Recently Williams, Boyd, Cascardi, and Poythress (1996) evaluated the concurrent validity and factor structure of the BPAQ with an offender sample. The authors report concurrent validity as a correlation of .79 between the BPAQ and NAS. The four-factor structure reported by Buss and Perry was replicated by Williams et al., however, a two-factor solution provided a better statistical fit with their data. Williams et al. comment that the four-factor solution of the BPAQ may not be generalizable to offender populations. Others have reported changes in factor structure of self report instruments when used with offender populations when compared to undergraduate samples or samples from a general population base (Kroner and Reddon, 1996). The design of the present thesis allows for a replication of the Williams et al. study with an offender population from a different country.

The Caprara scales

An attempt to validate the BDHI on an Italian population led Caprara and his associates (Caprara, 1982, 1986; Caprara et al., 1985; Caprara, Cinanni and Mazzotti, 1989) to investigate the emotional manifestations related to aggression. They identified two constructs as mediating variables for impulsive aggression: irritability, a tendency to react impulsively, controversially, and rudely, and emotional-susceptibility, a tendency to experience feeling of discomfort, inadequacy, and vulnerability. Two unifactor scales were developed to measure these constructs: Irritability and Emotional-Susceptibility (Caprara et al. 1985). Further factor analysis indicates that these factors may be related to a latent structure of emotionality or propensity to overreact emotionally, similar to Berkowitz's concept of negative affect. Research with extreme group designs using undergraduate psychology students in a modified Buss aggression generator situation (Buss, 1961 cited in Caprara et al. 1986) has supported the hypothesized relationship between increased aggression and high scores on the Irritability scale and the Emotional-Susceptibility scale (Caprara, 1982; Caprara, Passerini, Pastorelli, Renzi, and Zalli, 1986; Caprara et al., 1983; Caprara et al. 1986).

Caprara (1986) also considered the time interval between the activating incident and the opportunity to

respond. It was observed that as the interval of time increased between the provocation and opportunity to aggress, the response was diminished for some whereas for others it was increased. Caprara developed a scale, Dissipation-Rumination, to measure this construct. Research has supported the hypothesis that individuals with high scores on Dissipation-Rumination were more aggressive than those with low scores in studies where the opportunity to retaliate was delayed for a day or a week (Caprara et al. 1987). Caprara interprets this construct as representing a possible associative process between cognition and emotional expression as proposed by Berkowitz (1983).

These scales have not received much investigative attention outside of Caprara's laboratory. However, what is available tends to support the relationship between the scales and aggression. Bushman and Green (1990) found a relationship between high scores on both the Irritability scale and the Emotional-Susceptibility scale and violent ideation after presentation of violent stimuli with a sample of university students. Novaco (1994) included the Caprara scales in his validation study with hospitalized mentally disordered patients and reports similar predictive results for the Caprara scales as he found with the NAS.

Caprara has recently developed three more scales that assist in the explanation of a propensity for violent

behaviour (Caprara, Barbaranelli, Pastorelli and Perugini, 1994). The first is labeled Tolerance toward Violence scale and it was found to discriminate between individuals with or without previous exposure to violence either as a victim or perpetrator (Caprara et al., 1989). Higher scores are associated with more acceptance of aggression as a legitimate response (Caprara et al., 1994). The second scale, Fear of Punishment, examines a concept of guilt that reflects a fear of punishment directly linked to wrong-doing (Caprara, Manzi, and Perugini, 1992). The third scale, Need for Reparation, reflects a concept of a need to make amends for past deeds or experience remorse (Caprara, Manzi et al., 1992). The "fear driven" Fear of Punishment scale is related to the Irritability and Dissipation-Rumination scales, whereas, the "empathy driven" Need for Reparation scale is related to Emotional-Susceptibility. Caprara and his associates conceptualize aggressive behaviour as comprising of two second order factors: proneness to aggression and emotional responsiveness (Caprara et al., 1994). Proneness to aggression is a factor that is indicative of a willingness to use aggression, whereas emotional responsiveness is the reactivity to negative emotions. If both are high the likelihood of emotional aggression is high. Both Fear of Punishment and Need for Reparation load on the emotional responsivity factor. The theoretical

orientation of Caprara and his associates as indicated in their writings is similar to and derived from the work of Berkowitz (1983). As such, the scales represent a self report measure of individual differences in the processes hypothesized by Berkowitz: the highly automatic processing of negative affect and associationistic links with responses, memories and outcomes.

Summary

Two models of emotional aggression have been emphasized: Novaco (1994) and Berkowitz (1983, 1990). Novaco's model is a cognitive mediation model that purports subjective emotions are labeled by cognitive processes. These are highly automated processes not necessarily dependent on deliberate cognition in tandem with arousal. Novaco has developed the NAS directly from his model. The model as measured by the NAS has received support from a major study with mentally disordered patients.

Berkowitz, on the other hand, presents a dualistic model of emotion that ascribes associationistic properties to visceral activation with memory schemata that may be influenced by higher order cognitive mediation. In the model negative affect is sufficient to activate an anger-aggression syndrome that may result in violent behaviour. Unlike Novaco, Berkowitz has not developed a self report inventory to assess the efficacy of his model, however, two

developments appear to be representative of Berkowitz's position. One is the BDHI (Buss and Durkee, 1957) and the more recent revision the BPAQ (Buss and Perry, 1992). Both ascribe negative affect as a critical element to factors effecting aggression. However, unlike its predecessor, the BPAQ has limited use with offender populations with inconclusive results at postdicting aggressive convictions (Williams et al., 1996). The second is the scales developed by Caprara and his associates (Caprara, 1982, 1986; Caprara et al., 1985; Caprara et al., 1989). They incorporated Berkowitz's model in the development of their scales to assess aggressive tendencies.

Negative affect plays a role in the development and explanation of the BPAQ and the Caprara scales and the prediction of aggressive behaviour. The following section discusses the role negative affect plays in criminal behaviour.

Negative Affect and Criminality

Negative affect has been linked to delinquent or criminal behaviour. Caspi et al. (1994) report that two higher order factors of the MPI; Negative Emotionality from the Aggression, Alienation and Stress Reaction scales, and Constraint from the Traditionalism, Harm Avoidance and Control scales, are related to delinquency. In their discussion negative emotionality is equated with negative

affect as a personality configuration and this in conjunction with the lack of constraint or impulsivity "may predispose persons to antisocial behaviour" (p. 189). They speculate that the relatively stable nature of these personality traits reported across a 10 year period may contribute to antisocial behaviour in adults as well as juveniles.

Agnew (Agnew, 1992, 1994) uses negative affect as a global social factor in the development of delinquent behaviour in adolescences. Agnew's restatement of the General Strain Theory (GST) of delinquency focuses on the negative affect created by negative relationships as a major contributor to delinquency. Traditional strain theory concentrated on goal blockage as the main cause of strain. Agnew expands the causes of strain to include the removal of value, and the receipt of aversive stimulation. All types of strain will create negative affect that requires corrective action. Delinquency is considered as one type of possible corrective actions. An analysis of selected items from a longitudinal study on adolescent alcohol and drug use found support for the theory (Agnew and White, 1992). Paternoster and Mazerolle (1994) also report support for negative affect of GST as a major contributing factor in delinquency.

Although the literature is sparse, there appears to be a consensus regarding negative affect as a contributor to delinquent behaviour.

Purpose and Hypotheses of the Research

The general purpose of the present study is to improve the prediction of criminal violence. The focus is on how emotions, in particular negative affect and anger influence, criminal violence.

Negative affect has been associated with violent behaviour among young offenders, yet, few studies have addressed the issue with adult offender populations. The literature review indicates that prediction of criminal violence based on anger scales is equivocal at best. This, it was argued, was in part due to lack of theory behind the instruments used. It is hypothesized that theory driven anger scales will be better able to predict criminal violence. Two theoretical models of aggression and their respective anger scales were utilized to examine this hypothesis. The first model is the cognitive mediation model of Novaco (1994) and its derivative scale the NAS. The second is the cognitive-neoassociationistic model of Berkowitz (1983, 1990) which is represented by the BPAQ (Buss & Perry, 1992), and Caprara's six scales: Irritability, Emotional-Susceptibility, Dissipation-Rumination, Tolerance toward Violence, Fear of Punishment,

and Need for Reparations (Caprara 1986; Caprara et al. 1985; Caprara et al., 1989; Caprara, Manzi et al., 1992). This study will also determine if the predictions of each model would differ given the basic properties of the models as previously discussed.

The literature review noted that recent studies have indicated that the LSI-R and SIR are predictive of criminally violent behaviour. This study proposes to test this result and determine if anger inventories are more effective in predicting criminal violence than these actuarial type indices.

As such, the present design attempts to answer a number of questions:

1. Are the anger measurements reliable and valid with this sample?
2. Do the models of anger and aggression as measured by the reviewed instruments (NAS, BPAQ, and Caprara scales) lead to differential assessments of anger?
3. Can measures of negative affect or anger differentiate between criminally violent and non-violent offenders?
4. Are the actuarial instruments the SIR and LSI-R able to identify criminally violent offenders in a Canadian federal sample?
5. Are anger inventories more effective than actuarial indices at postdicting violence?

6. Is there an interactive effect between actuarial and anger scales in the identification of violence?

METHOD

Approval to conduct the research described in the preliminary study and the principle study was received from both the Correctional Service of Canada and the Ethics Committee of the Department of Psychology, Carleton University.

Participants in General

Participants were recruited from the Assessment Unit of Millhaven Institution (MAU) in Bath, Ontario, Canada where the investigator is employed. The MAU is a regional center for the Ontario Region of the Correctional Service of Canada (CSC) and is a continuous intake facility. The prime responsibility of the MAU is to process all federally sentenced inmates whose sentence length is two years or more in the Ontario Region, and all federal inmates reincarcerated for conditional release violations in the Ontario Region. Approximately 50 inmates are admitted weekly to MAU.

Preliminary Study

The Caprara scales, Irritability, Emotional-Susceptibility, Dissipation-Rumination, Tolerance toward Violence, Fear of Punishment, and Need for Reparations are unpublished research scales developed for use with Italian university student samples. Although English translations have been successful in predicting increases in aggressive tendencies within a North American university student sample (Bushman and Green, 1990) and prior violent convictions of mentally disordered patients (Novaco, 1994), they have not been used with an offender population. Muirhead and Rhodes (1997) found that 75% of federally sentenced offenders in Ontario read at a grade 10 level or lower and 18% read below a grade 6 level. Thus the readability of the Caprara scales may be an issue when the scales are used with an offender population.

The Flesch-Kincaid Grade Level² (Microsoft, 1995) readability of the original Caprara scales is higher than a grade 10. These results were not overly surprising, given that the scales have only been used with samples of university students. On close examination of the Caprara scales it became clear that the instructions and some of the items contained easily replaceable multi-syllable words. It

²The Flesch-Kincaid Grade Level readability score is calculated from an average of the number of syllables per word and the average of the number of words in a sentence. The results indicate the school-grade level that can readily understand the document in question.

was expected that the replacement of these words could make the scales more readable without effecting the scale properties. This preliminary study reports on the test of this hypothesis.

Participants

Participants were 20 consecutive admissions adult male offenders who were attending the MAU, Psychology department to participate in testing for a risk-needs assessment. The sample consisted of 70% White, 24% Black and 6% Asian. The age of the participants ranged from 20 to 69 with a mean of 32.3 (SD = 13.3). Sentence length averaged 3.5 years (SD = 1.54) ranging from 2 years to 7 years. The major confining offense was 23.5% property, 29.4% assaultive, 35.3% robbery, and 11.8% sexual.

Measures

Group B (n = 10) received the original 6 Caprara scales. Group A (n = 10) received a set of revised scales. The changes made to the original scales were relatively minor (see Appendix A for original and Appendix B for the revised scales). There was one offending clause in the instructions "be spontaneous and accurate as much as possible within the limits of choices offered below". This was replaced with "Remember there are no right or wrong answers". Some of the word changes were spite for rancour, wrongs for injustices, and insults for offenses. The Flesch-

Kincaid Grade Level for the revised scales reflects reading levels more representative of Ontario federal inmates.

Procedures

Research participants were recruited individually by a research assistant upon completion of the regular testing battery. They were asked to take part in a pilot study of a new group of tests. They were advised it was voluntary and no payment would be made for their participation. They were told that they could withdraw from the study at any time with no penalty. After each participant completed an informed consent form (see Appendix C) that explained the study and the confidentiality of the information, they were randomly assigned to group A or B forming equal groups of 10. The participant was then given his test package to complete. Upon completion the tests were checked for omitted items and the participant was thanked for his participation and allowed to return to his cell.

Analysis

Alphas and mean scores of each scale were compared by t-tests for independent samples using SPSS for Windows software (SPSS, 1995).

Results and Conclusion

No group differences were observed for demographic variables of age, race, offense type, sentence length, or number of previous convictions. Likewise no differences were

observed between the original and the revised scale means. Although not recorded for analysis, participants who received the revised scales requested less assistance with the test items than those participants who received the original versions. It would appear that the revisions to the instructions and test items had the desired effect of making the scales more readable for the population in question and did not effect the scales' properties. Thus the revised scales are used in the principal study of this research.

Principal Study

Participants

Participants (N=190) were unpaid volunteer adult male offenders recruited from the MAU over a period of 7 months in 1996-1997. The sample consisted of 77.9% White, 4.2% Native North American, 15.3% Black, 2.6% Asian and other races. The average age was 34.3 (SD = 9.35) with a range from 19.6 to 67.5. Seventy-four percent were admitted for new offenses and the remaining 26% had been returned to jail for conditional release violations that included technical violations and new offenses. Incident offenses included 45% property 32% robbery, 23% assaultive including murder and manslaughter. Offenders convicted of sexual offenses against children were not included in the study. For participants returned for conditional release violations, incident offense was taken as the most serious (violent) conviction registered during the present sentence. Length of sentence ranged from 2 years to life (recorded as 99 years) with a mean of 8.5 years (SD = 19.33) excluding life sentences (n = 8) the mean was 4.5 (SD = 3.49).

Measures

Predictor Scales

The predictor scales were adapted for computer presentation. The program employs a forced choice format that does not allow for corrections or skipped items. One

item was displayed on the screen at a time and participants were able to rest after each scale. The literature review detailed the validity of each instrument as a self report measure of negative affect and anger.

1. NAS (Novaco, 1994) is a 73-item 2 part scale. Part A contains 48 items with 3-point Likert responses (1 = never true, 2 = sometimes true, or 3 = always true). Alpha is .95 and test-retest is .84. Part B contains 25 items with 4-point Likert responses (1 = not at all angry to 4 = very angry). Alpha is .95 and test-retest is .86. Total scale alpha is .97 with a test-retest reliability of .86.
2. BPAQ (Buss & Perry, 1992) is a 29-item scale with 5-point Likert responses (1 = extremely uncharacteristic of me to 5 = extremely characteristic of me). Scores are reported for total scale and four subscales: physical aggression, verbal aggression, anger, and hostility. Coefficient alphas are .89, .85, .72, .83, and .77 respectively. A nine week test-retest correlations ranged from .72 to .80.
3. Emotional Susceptibility (Caprara et al., 1985) is a 40-item (30 effective and 10 control) with 6-point Likert responses (1 = completely false for me to 6 = completely true for me). Reliability measures reported are coefficient alpha of .88, test-retest correlation of .84,

and split half coefficient of .94. The revised version developed for this study had an alpha of .92.

4. Irritability (Caprara et al., 1985) is a 30-item (20 effective and 10 control) with the same 6-point Likert responses. Reliabilities are .81 for coefficient alpha, .83 for test-retest correlation and .90 split half coefficient. The revised version developed for this study had an alpha of .91.
5. Dissipation-Rumination (Caprara, 1986) is a 20-item scale with 6-point Likert responses. Reported reliabilities are coefficient alpha .87, test-retest .81 and split half coefficient .91. The revised version developed for this study had alpha of .95.
6. Tolerance toward Violence (Caprara et al., 1989) is a 29-item scale with 6-point Likert responses. The reported reliabilities are for alpha .81 and split half .74. The revised version developed for this study had an alpha of .88.
7. Fear of Punishment (Caprara et al., 1992) is a 30-item 6-point Likert response scale. Reliabilities are reported as .91 for alpha and .88 for split half. The revised version developed for this study had an alpha of .91.
8. Need for Reparations (Caprara et al., 1992) is a 20-item 6-point Likert response scale with reliabilities of .80

alpha and .82 split half. The revised version developed for this study had an alpha of .89.

Actuarial Indices

The actuarial indices scores were obtained or derived from each participant's CSC file.

1. The SIR (Nuffield, 1982) is a compilation of fifteen social and criminal history variables that were found to be statistically related to general recidivism, such as current offense, number of prior incarcerations, and marital status. Weights were assigned to each variable with the formula of ± 1 for every $\pm 5\%$ difference from base rate of success. A simple summation of the weights provides the criterion score. The range of scores can be from -30 to +27. A lower score is indicative of greater risk of recidivism.
2. The LSI-R (Andrews and Bonta, 1995) is a 54-item checklist of ten areas of psycho-social and legal functioning. Scores can range from zero to 54 with higher scores indicative of higher risk to reoffend. Internal consistency is reported to be high with alphas ranging from 0.71 to 0.90. Inter-rater reliabilites are also reported to be high ranging from 0.80 to 0.94.

Procedures

Participants were asked to report to the Psychology department where they were met by a research assistant who

asked them individually to participate in the study. It was emphasized that participation was voluntary and no payment would be made for participating in the study. They were also informed that they could withdraw from the study at any time. Each participant was given a brief explanation of the study and asked to read and sign a consent form (Appendix D). The consent form allows the primary researcher access to the participant's CSC files. The consent form included information about the confidentiality of the data to be collected. At no time will the results be released to CSC, to the individual participant or be made part of the participant's official CSC files. The consent form also provided an overview of the study and described its purpose as a validation study of computerized test administration. Participants were informed that a summary of the results of the study would be made available upon request at the completion of the study.

Upon completion of the consent form each participant was assigned a computer station and the research assistant explained how the program worked and answered questions related to the computer presentation. The predictor scales were administered at this time by the Computerized Item Management System (CIMS, Kroner, Muirhead, and Mills, 1997) a program developed specifically for the psychology department of Millhaven Institution for use on

microcomputers. On completion of the test battery any questions were answered without disclosing personal or specific information about the results or instruments used. Each participant was given a briefing sheet that explained the study as an investigation of individual differences in aggression and violence (Appendix E). After the participant had completed the computerized testing his CSC files were reviewed by the principal investigator to obtain the SIR and LSI-R scores and score the criterion variables.

Criterion Variables

Criterion variable selection may adversely affect the outcome and generalizability of a study (Shoham et al., 1989). Therefore, in accordance with the literature review, five criterion variables were developed. They naturally fall into two categories: incident offense criterion variables and historical criterion variables.

1. Type of Offense is the classification of the incident offense as (1) non-violent, (2) robbery offenses, and (3) violent offenses other than robbery. In the case of multiple offenses, the most violent of offenses, according to the National Parole Board of Canada (NPB, 1989) schedule 1 of offenses was coded as the incident offense. Robbery, although it is considered as a violent offense by the schedule of offenses, was identified as a separate category of offense after Serin and Amos (1995).

However, for parts of the analysis categories 2 and 3 were collapsed to form a single violence offense category.

2. Degree of Harm is a seven point scale: (1) no victim, (2) no injury to victim, (3) minor or slight injury, (4) treated and released from hospital or clinic, (5) hospitalized, (6) death, and (7) death with mutilation, derived from incident offense, representing the level of injury or harm suffered by the victim. This was adapted from the victim harm rating scale used by Harris et al. (1993).
3. Motivation for Violence was coded from the incident offense as a three point scale: (1) for non-violent offense, (2) affective violence and (3) instrumental violence. This is a determination of whether the violence was planned or impulsive based on the motivation for the offense (Meloy, 1988; Shoham et al., 1989), with a level to identify non-violent offense.
4. Record of Violence is a five point rating scale of the level of Criminal Violence recorded on the participant's criminal record: (1) for no criminal record, (2) non-violent criminal record, (3) minor violent history (three or less prior violent offenses), (4) a violent history (more than three prior violent convictions), and (5) for

a past conviction for offenses that resulted in the death of the victim.

5. Lifestyle Violence is a three point rating scale: (1) no violence, (2) some violence in lifestyle, and (3) a definite violent lifestyle, of the participant's life long propensity for physical violence and assaultiveness that is not dependent on criminal convictions (Lothstein and Jones, 1978; Renson et al., 1978). Social histories, institutional behaviour, as well as criminal convictions will provide the basis for this classification.

As the criterion's scores are not totally objective, 10% of the participant files were scored independently by two raters. Rater concurrence on the Type of Offense, Motivation for Violence, and Record of Violence criterion variables was 100%. For the criterion variable of Degree of Harm concurrence was 95%. This indicated a disagreement on one case. The Lifestyle Violence criterion variable had the lowest concurrence rate of 80% or agreement on 16 of 20 cases. Two cases were rated as having a more violent lifestyles and two were rated as having a less violent lifestyles than the principal investigator. To settle disputes a conservative position was taken and the lower score was used in the final analysis. Since all of these criterion variables are related to the subject's offense and offense history, independence of criterion is not assumed.

Analysis

Internal consistencies, Spearman Brown split half coefficients, bivariate multiple correlations, exploratory factor analysis and multivariate analysis were completed using SPSS for Windows version 6.2 (SPSS, 1995).

Confirmatory factor analysis and mean comparisons between studies were completed using A_STAT (Reddon, 1992).

Reliabilities, Crombach's alphas and Spearman Brown split half coefficients were computed for each scale. A confirmatory factor analysis was conducted on the BPAQ to

replicate the study by Williams et al (1996). A factor analysis was also conducted on each of the Caprara scales in order to replicate his single factor solutions reported. The relationships, if any, between the measures and dependent variables were explored by manova procedures. Comparisons of means were accomplished by using t-test for independent samples.

RESULTS

Demographic Comparisons

No differences were observed for age and sentence length between the participants and all the other inmates processed by MAU during the time of the study (see Table 1). Table 2 summarizes the frequency distributions of the demographic variables of marital status, race, admission type, and offense classification. Frequencies of offense classification excluded sex offenders who accounted for 18.9% of all admissions to MAU during the period of data collection. No differences were observed between participants and other admissions using crosstabs comparison of frequencies (SPSS, 1995). Therefore, it was concluded that the sample was representative of the inmates processed at MAU during the period of recruitment serving sentences for offenses of a non-sexual nature.

Summary of Criterion Variables

For Type of Offense, 80 (42.1%) of the participants were classified as committing a non-violent incident offense. Of the remaining 110 (57.9%), 60 (31.6%) committed robbery and 50 (26.3%) other assaultive offenses including murder.

The Degree of Harm suffered by the victims of the 110 violent offenders was 50 (45.5%) no injuries, 24 (21.8%) minor injuries, 12 (10.9%) treated and released, 5 (4.5%)

Table 1

Demographic Comparisons of Participants and Other Admissions

Variable	Participants		Other Admissions		t	
	Mean	(SD)	Mean	(SD)	value	(p)
Age	34.4	(9.40)	35.60	(10.20)	-1.417	ns
Sentence Length	8.47	(19.33)	9.18	(20.60)	-.410	ns

Note: Participants N = 190, Other Admissions N = 413

Table 2

Frequency Comparisons on Demographic Variables between
Participants and Other Admissions

Variable	Other Admissions (n = 413)	Participants (n = 190)
Marital Status		
Single	38.0%	38.9%
Married	46.0%	48.9%
Separated	16.0%	12.2%
Widowed		
Never Married		
Race		
White	71.9%	77.9%
Native	7.7%	4.2%
Black	14.0%	15.3%
Other	6.4%	2.6%
Type of Admission		
New Offense	70.9%	74.2%
Readmission	29.1%	25.8%
Offense Classification*		
Property	44.8%	45.3%
Robbery	29.0%	32.1%
Other Violent	26.3%	22.6%

Note: * excludes sex offenders n = 335

hospitalized, 17 (15.5%) died, and 2 (1.8%) death with mutilation.

Motivation for Violence was classified as 62 (56.4%) instrumental violence and 48 (43.6%) affective violence for the 110 violent offenders.

The Record of Violence criterion classified twenty-one (11.1%) of the 190 participants with no prior criminal history. Of the remaining 169 (88.9%), 76 (40%) had non-violent criminal histories, 62 (32.6%) had minor violent histories, and 28 (14.7) had violent histories. Three (1.6%) participants had committed a previous offense that had resulted in the death of the victim.

The Lifestyle Violence criterion proved to be the most difficult variable to assess and had the lowest interrater reliability. The difficulty was the absence of pertinent information on CSC files that adequately addressed lifestyles let alone a propensity for violent behaviour. Consequently, a conservative position was adopted and only files with definite references to a violent lifestyle were coded as being violent. This may under-estimate the actual number of offenders with violent lifestyles. Thirty-six (19.0%) were identified as having a violent lifestyle and 119 (62.6%) as non violent. Another 35 (18.4%) had some evidence of violence in their background that was insufficient to be classified as a violent life style.

Criterion Independence

The assumption that criterion variables would not be independent was confirmed (see Table 3). Criterion intercorrelations were strongest with the other members of their respective source of information. Incident offense criterion variables demonstrated intercorrelations ranging from 0.84 to 0.95. The historical criterion variables correlated with each other at .56. The actuarial indices correlated at -.74. Historical criterion variables were also correlated at $p. < 0.001$ with all other criterion variables.

LSI-R was correlated with classification of offense and affective versus instrumental violence at $p. < .05$, whereas, the SIR was not correlated with incident offense criterion variables.

Actuarial Indices

The current results for the SIR scale distribution are consistent with results reported for a large cohort of released federal offenders (Bonta et al., 1996) and a sample of provincial parolees (Rowe, 1995). They are summarized in Table 4. Similarly the LSI-R results are consistent with the results published by Loza and Simourd (1994) with a federal inmate sample and by Rowe's (1995) provincial sample. The results are summarized in Table 5.

Table 3

Correlations among Criterion Variables

Criterion						
Variables	1	2	3	4	5	6
1. Type of Offense						
2. Degree of Harm	0.84					
3. Motivation for Violence	0.95	0.84				
4. Criminal Violence	0.32	0.18*	0.34			
5. Lifestyle Violence	0.42	0.34	0.43	0.57		
6. SIR	0.00	0.12	-0.01	-0.47	-0.25	
	0.15*	0.02	0.17*	0.52	0.32	-0.74

Note: **bold** not significant, * significant at $p < .05$, all other correlations are significant at $p < 0.001$.

Table 4

SIR Comparisons

Source	Mean	(SD)	Range	N
Current Results	-2.17	(10.61)	-21 to 23	190
Bonta et al. (1996)	na	na	-20 to 24	3267
Rowe (1995)	0.04	(7.52)	-18 to 19	521

Table 5

LSI-R Comparisons

Source	Mean	(SD)	Range	N
Current Results	28.23	(10.54)	2 to 47	190
Loza and Simourd (1994)	26.20	(9.90)	1 to 41	161
Rowe (1995)	23.81	(7.37)	4 to 49	389

Predictor Scales: Internal Consistency and Validity

Internal Consistency

In the absence of a more robust assessment of reliability of the instruments, internal consistency via coefficient alpha was calculated for each scale and subscales.

Novaco Anger Scale

The alpha coefficients obtained for NAS total .97; Part A .95, and Part B .96 were virtually identical to those reported by Novaco (1994) and Mills et al. (1997) (see Table 6). Also included in Table 6 are the means and standard deviations (SD) obtained in the three studies. The means from the current sample were significantly ($p < .0000$) lower than those reported by Novaco for psychiatric inpatients. They did not differ from Mills' et al. inmate sample means.

Aggression Questionnaire

Coefficient alpha found for BPAQ was .93 and the alpha for the four subscales ranged from .76 to .86. These results are consistent with those reported by Buss and Perry (1992) and a recent reliability and validation study with an inmate sample by Williams et al. (1996).

The observed means were, as expected from the work of Kroner and Reddon (1996), significantly ($p < .0001$) lower than those reported for college students (Buss and Perry,

Table 6

Novaco Anger Scale: Comparison of Internal Consistency,
Means and Standard Deviations

	NAS		
	Total	Part A	Part B
Current Results			
Alpha	0.97	0.95	0.96
Mean	130.26	77.16	52.66
(SD)	(29.37)	(15.27)	(14.98)
1994) Results			
Alpha	0.97	0.95	0.95
Mean	155.30	90.10	65.30
(SD)	(33.50)	(18.10)	(17.50)
T-test comparison	-7.34*	-7.07*	-7.12*
Mills, Kroner, and Forth (1997)			
Results			
Alpha	NA	0.95	0.96
Mean	NA	80.38	53.01
(SD)	NA	(15.78)	(15.77)
T-test comparison		-1.68	0.18

Note: * significant $p < .0000$

1992). Surprisingly the current means for physical aggression ($p. < .01$) and verbal aggression ($p. < .05$) scales were lower than those reported by Williams et al. (1997) from their inmate sample (see Table 7).

Caprara's Scales

The observed internal consistencies, coefficient alpha, equaled or exceeded those reported for the Caprara scales (Caprara et al., 1985; Caprara et al., 1989; et al., 1992; Caprara, 1989). The results are summarized in Table 8. Caprara and his associates also regularly report Spearman Brown split half coefficients for their scales. Spearman Brown split half computed on the current results were equivalent to those reported (see Table 8).

Caprara and his associates have not regularly provided normative data on his scales. Only Caprara et al. (1992) reported the means and SD for a group of North American university students for the Fear of Punishment and Need for Reparations scales. The current means were higher for both Fear of Punishment ($t = 3.368, p. < .001$) and Need for Reparations ($t = 2.442, p. < .05$) than those reported. Contradicting the trend observed with other scales.

Concurrent Validity

Concurrent validity was assessed via a Pearson correlation coefficient matrix computed from the scores on the predictor scales. All between predictor scale

Table 7

Aggression Questionnaire: Comparison of Internal
Consistency, Means and Standard Deviations

	BPAQ				
	Total	Physical	Verbal	Anger	Hostility
Current Results					
Alpha	0.93	0.81	0.76	0.76	0.86
Mean	68.18	20.80	12.60	15.90	18.80
(SD)	(22.40)	(7.90)	(4.40)	(5.80)	(7.30)
Buss and Perry (1992) Results					
Alpha	0.89	0.85	0.72	0.83	0.77
Mean	77.80	24.30	15.20	17.00	21.30
(SD)	(16.50)	(7.70)	(3.90)	(5.60)	(5.50)
T comparison	5.47*	-5.36*	-7.30*	-2.30**	-4.35*
Williams et al (1997) Results					
Alpha	0.92	0.81	0.50	0.76	0.82
Mean	72.80	24.10	13.60	16.40	19.90
(SD)	(19.70)	(7.70)	(3.90)	(5.50)	(6.60)
T comparison	-1.92	-3.67**	-2.11**	-0.77	-1.38

Note: ** significant at $p < .05$, * significant at $p < .0000$

Table 8

Comparison of Caprara's Scales Internal Consistency and Reliability

Scale	Alpha		Split-half	
	Observed	Reported	Observed	Reported
Emotional-Susceptibility	.89	.88	.85	.94
Irritability	.92	.81	.90	.90
Dissipation-Rumination	.91	.87	.89	.91
Tolerance toward Violence	.89	.81	.87	.74
Fear of Punishment	.92	.91	.89	.88
Need for Reparations	.80	.80	.77	.82

Note: Reported results for Irritability and Emotional-Susceptibility are from Caprara et al. (1985); Dissipation-Rumination from Caprara (1986); Tolerance toward Violence from Caprara, et al. (1989); and Fear of Punishment and Need for Reparations from Caprara et al. (1992).

correlations were significant at $p < .001$ except for the Need for Reparations scale (see Table 9). Similar correlations have been reported by Mills et al. (1997) for the NAS part A and part B and the BPAQ total score and its subscales scores. The results were compared in Table 10. Also, Novaco (1994) reported a correlation of .78 between Irritability and NAS total score which is almost identical to the correlation of .77 found in the current analysis. The results of correlations among the NAS, BPAQ and five of Caprara's six scales have supported concurrent validity of the predictor scales.

Factorial Validity

Cicchetti (1994) argued that the clinical usefulness of an instrument is enhanced if the factor structure is replicated across samples. He referred to this process as factorial validity. Given the apparent differences between the developmental samples for the predictor scales and the current sample of federal inmates, factor validity was considered to be intrinsically important. However, the use of factor analysis in the development of the predictor scales varied markedly. As such, each predictor's factor validity was assessed with procedures consistent with the factor development. The method of factor extraction can also affect the number of factors described. The standard default method for factor extraction in most standard statistical

Table 9

Summary of Predictor Scale Intercorrelations

Scale	NAS		
	Total	Part A	PartB
BPAQ			
1. Total	0.69	0.74	0.63
2. Physical scale	0.63	0.68	0.54
3. Verbal scale	0.58	0.64	0.50
4. Anger scale	0.58	0.64	0.52
5. Hostility scale	0.62	0.63	0.64
6. Physical factor*	0.66	0.72	0.58
7. Verbal factor*	0.66	0.68	0.65
Caprara's Scales			
8. Emotional-Susceptibility	0.48	0.53	0.46
9. Irritability	0.77	0.82	0.71
10. Dissipation-Rumination	0.73	0.79	0.69
11. Tolerance toward Violence	0.55	0.61	0.49
12. Fear of Punishment	0.52	0.56	0.53
13. Need for Reparations	0.07	-0.01	0.10

Note: * Factors from Williams et al. (1996)

Table 9 cont.

Scale	BPAQ						
	1	2	3	4	5	6*	7*
BPAQ							
1.							
2.							
3.							
4.							
5.							
6*.							
7*.							
Caprara's Scales							
8.	0.41	0.28	0.37	0.38	0.43	0.35	0.45
9.	0.75	0.68	0.62	0.68	0.66	0.73	0.70
10.	0.67	0.60	0.56	0.59	0.59	0.63	0.62
11.	0.51	0.43	0.41	0.41	0.53	0.44	0.53
12.	0.48	0.33	0.47	0.40	0.50	0.41	0.53
13.	-0.07	-0.13	-0.03	-0.06	0.01	-0.08	-0.01

Note: * Factors from Williams et al. (1996)

Table 10

Comparison of Correlations Between the BPAQ and the NAS with
Inmate Samples

	<u>NAS Part A</u>		<u>NAS Part B</u>	
	Observed	Reported	Observed	Reported
BPAQ				
Total	0.74	0.79	0.63	0.63
Physical	0.68	0.68	0.54	0.54
Verbal	0.64	0.48	0.50	0.50
Anger	0.64	0.70	0.52	0.62
Hostility	0.63	0.64	0.64	0.62

Note: reported results from Mills et al. (1997)

packages is the eigenvalue > 1.00 rule. Floyd and Widaman (1995) argued that this rule tends to over-estimate the number of factors extracted. They suggested a scree test as a "rule of thumb" may be more appropriate for factor extraction and was employed in the current factor analysis.

Aggression Questionnaire

The BPAQ was the product of an extensive factor analytic approach to test construction. Buss and Perry (1992) conducted an exploratory principal-axis factor analysis with oblimin rotation on 52 original items. This resulted in a four-factor solution: Physical Aggression (PA), Verbal Aggression (VA), Anger (A), and Hostility (H), and a reduction in items to 29. Confirmatory factor analysis confirmed the latent four-factor structure of the BPAQ. However, a single higher order factor of general aggression fits the data as well as the four-factor solution. Williams et al. (1996) confirmatory factor analysis of the BPAQ resulted in statistical best fit of their data with a two-factor solution: Physical Aggression Factor (PAF) and Verbal Aggression Factor (VAF). The published literature on the BPAQ indicates three possible solutions. Consequently, the BPAQ's latent factor structure with the current results was examined using two procedures.

A confirmatory principal component analysis was performed on the current item correlations using a Proustes

procedure (Reddon, 1992). For the original Buss and Perry (1992) factor structure this involved establishing a target matrix made up of four columns, one per factor and 29 rows, one per item. This target matrix represents the hypothesis that each item would load on a single component as described by Buss and Perry. Entries in the target matrix were coded 1.00 for keyed entries and 0.00 for non-keyed entries. The fit between the observed data and the hypothesized matrix was evaluated by a coefficient of congruence. The probability of the observed congruence was evaluated relative to the congruence for the observed data similarly rotated to 10,000 random row permutations of the target matrix (Reddon, 1992). Congruencies observed were 0.64, 0.41, 0.49, and 0.76 for PA, VA, A, and H, respectively. Only the congruence coefficient for factor H was significant at the 0.001 level. The four factor structure reported by Buss and Perry was not confirmed with the present results.

Similarly, the hypothesized matrix for the Williams et al. (1996) factor structure has two columns for their two factors with 29 rows. Three items not included in Williams et al. analysis were coded as 0.00 in each column effectively creating a 2 x 26 matrix. The congruence observed with 10,000 random row permutations were 0.75 for the PAF and 0.71 for the VAF. Both were significant at the

0.05 level. This indicated modest support for the Williams et al. two-factor structure.

Second, an exploratory principal component analysis with varimax rotation (Holden and Fekken, 1994) was conducted on the current item intercorrelations. Items that are over or under endorsed may limit the potential variance of the scale score. Therefore, before the analysis was conducted, item endorsement was assessed via the distributions of the item score, skewness. Five items whose skewness exceeded 1.125, that indicated high endorsement, were dropped from the analysis. A scree test plot became a flat gradual slope at the second eigenvalue (the first five eigenvalues were 9.60, 1.90, 1.35, 1.08, 0.99). Varimax rotation identified three interpretable factors of 10, 6, and 7 items respectively. Item factor loading for the 23 items included in the analysis are summarized in Table 11. Alpha for the 23 item scale denoted by the principal component analysis is 0.93 with alpha of 0.89, 0.85, and 0.84 for the respective factors. Items identified as representing a physical aggression factor by both Buss and Perry, (1992) and Williams et al. (1996) represented 66.6% (4 of 6) of the second factor items. Likewise verbal aggression factor items accounted for 71.4% (5 of 7) of the third factor. No definite pattern appears to exist for items on factor one. The results indicate that the factor

structure of the BPAQ described by both Buss and Perry, and Williams et al. was not replicated with the present results.

Caprara Scales

The Caprara scales are described as uni-dimensional scales derived from exploratory principal-component factor analysis. Confirmatory factory analysis is inappropriate for single factor structures. Therefore, principal-component factor analysis was computed on each of the six Caprara scales in an attempt to replicate the reported factor structure.

A scree test plot on the Irritability scale became a flat gradual slope at the second eigenvalue (the first five eigenvalues were 8.37, 1.35, 1.22, 0.98, 0.91). This factor accounted for 41.8% of the variance and all items had their highest loading on this factor also. The uni-dimensional structure of Irritability (Caprara et al., 1985) has been replicated with the current results.

A scree test indicated a two-factor solution for the Emotional-Susceptibility scale. The first factor identified (eigenvalue 9.16) accounted for 30.5% of the variance and 22 items had their highest loading on this factor. The second factor (eigenvalue 2.17) accounted for 9% of the variance. However, with only 4 items and an alpha of 0.37 this factor was unlikely to be interpretable (Floyd and Widaman, 1995).

Table 11

Principal Component Factor Loading for the 24 Items of the
BPAQ Analyzed

BPAQ

<u>Item No.</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
02	-.049	.615	.115
03	.055	.283	.629
04	.348	.108	.545
05	.216	.766	.142
06	.416	.226	.379
07	.275	.386	.448
08	.297	.163	.672
09	.170	.742	.245
10	.345	.587	.198
11	.563	.246	.416
12	.307	.024	.716
14	.719	.219	.091
16	.555	.067	.439
17	.242	.622	.357
18	.497	.308	.383
20	.562	.068	.439
21	.426	.718	.032
22	.750	.219	.091
23	.159	.423	.591
26	.681	-.004	.315
27	.563	.499	.121
28	.228	.438	.622
29	.699	.314	.195

Therefore, current results provided modest support for a uni-factor solution for Emotional-Susceptibility scale.

Caprara et al. (1985) conducted a conjoint principal component analysis on the Irritability and the Emotional-Susceptibility scales and reported a two factor solution accounting for 30% of the variance. A similar conjoint analysis on the current results also obtained a two factor solution with a scree test and accounted for 37.2% of the cumulative variance. Also like Caprara et al. items on each scale were distinguished from each other based on their sign on the second factor. It may be concluded that the conjoint factor structure of the Irritability scale and the Emotional-susceptibility scales was replicated.

Principal component analyses with scree test for extraction on the Dissipation-Rumination scale described a one factor solution accounting for 45% of the variance. Nineteen of the 20 items loaded higher on the first factor supporting Caprara (1986) uni-factor interpretation of the scale.

A scree test plot on the Tolerance toward Violence scale becomes a flat gradual slope after the second eigenvalue (the first six eigenvalues were 7.40, 2.03, 1.43, 1.32, 1.12, 1.00). The first and second eigenvalues accounting for 28.5% and 7.8% of the variance respectively. This compares to 18.9% and 6.7% reported by Caprara et al.

(1989). Ninety-six percent of the items loaded higher on factor one than factor two compared with the 69% reported by Caprara et al. (1989). The current results provided stronger support for a one factor solution than the evidence provided by Caprara et al. (1989)

Fear of Punishment and Need for Reparations were scales developed to represent Caprara's bimodal concept of guilt (Caprara, et al., 1992). They were derived from the same item pool and inclusion criterion variables for either scale were high loading on one factor and zero loading on the other. This resulted in 23 items for Fear of Punishment and 15 items for Need for Reparations. The principal component analysis using a scree test extraction criterion variables identified a two factor solution for the current results. Factor one had an eigenvalue of 9.978 accounting for 26.3% of the variance and factor two had an eigenvalue of 4.159 accounting for 10.9% of the variance. These are comparable with those reported. Factor loading for a varimax rotated two factor solution is presented in Table 12 along with the results reported by Caprara, et al. (1992). Only one item presented any difficulty with the Fear of Punishment scale. Item 19 loaded on factor two (0.634) rather than factor one. This item "I have experienced feelings of remorse." may have a different meaning for inmates than students. Two items on the Need for Reparations scale loaded weakly on both

factors: item 4 (0.242 and 0.055) and item 6 (0.154 and 0.023). Two other items loaded equally on each factor, item 3 (0.476 and 0.447) and item 8 (0.321 and 0.310). It would appear that Fear of Punishment scale factor structure has been replicated by the present results. However, the results on the Need for Reparation scale are not as supportive. Four items failed to load as indicated raising questions about their usefulness in an inmate sample. Removing the four items Need for Reparations scale based on the present results does not appear to affect the scale's internal consistency or concurrent validity (see Table 13).

Novaco Anger Scale

Novaco (1994) did not use factor analysis in the development of the NAS. Part A and part B and their respective domains and subscales were constructed apriori from the theory of aggression supported by Novaco. Correlations among domains ranged from .75 to .88 and the highest subscale correlations were with their respective domain (see Table 14). These results are consistent and equivalent with the results reported by Mills et al. (1997) on a similar sample of Canadian federal inmates. Although it would be of theoretical interest to factor analyze the NAS, the current design violates the rule of thumb of 5 subjects per item required for an exploratory factor analysis (Floyd

Table 12

Principal Component Analysis: Fear of Punishment and Need
for Reparations

Item	Fear of Punishment				Need for Reparations			
	observed		Caprara		observed		Caprara	
	F1	F2	F1	F2	F1	F2	F1	F2
01	.670	.227	.589	.325	-.188	.635	-.155	.430
02	.585	.159	.583	-.059	.145	.590	-.215	.583
03	.559	.015	.364	-.096	.476	.447	.367	.427
04	.624	-.194	.655	.209	.242	.054	.084	.449
05	.631	-.015	.571	.145	.241	.646	.345	.550
06	.519	.357	.615	.077	.154	.023	-.091	.413
07	.632	.357	.631	.050	.145	.449	.059	.591
08	.690	.050	.702	-.032	.320	.310	.373	.284
09	.475	.016	.577	.127	.041	.622	.080	.574
10	.618	.097	.576	-.196	.386	.431	.382	.433
11	.628	.197	.624	-.009	.125	.387	.108	.559
12	.719	.222	.773	.155	.069	.593	.128	.634
13	.634	.412	.753	.091	.194	.479	.077	.454
14	.494	-.321	.367	-.371	-.189	.614	-.092	.488
15	.489	.376	.557	-.015	-.079	.689	.054	.596
16	.668	-.066	.477	.151				
17	.691	-.087	.514	.014				
18	.488	.161	.274	.033				
19	.058	.634	.457	.132				
20	.481	.379	.714	.023				
21	.613	.083	.669	-.037				
22	.643	.208	.624	-.158				
23	.628	.313	.635	-.024				

Note: Caprara's results from Caprara et al. (1992)

and Wildaman, 1995). Therefore, the analysis was not conducted.

Summary

Factorial validity varied with the predictor scale under review. The BPAQ did not demonstrate factorial validity, whereas the Caprara scales for the most part did. Factorial validity was not assessed for the NAS.

Anger Model Comparisons

To address the null hypothesis that differences between Novaco's and Berkowitz's models of anger would not be apparent in the scores on instruments purported to assess the models, a principal component factor analysis with varimax rotation was conducted on the intercorrelations among the four subscales of the BPAQ (Buss and Perry, 1992), part A and B of the NAS (Novaco, 1994), and the six Caprara scales. Both a scree test and an eigenvalue of 1 extraction criterion identified a two factor solution that accounted for 70.3% of the variance. Factor 1 has an eigenvalue of 6.80 and accounts for 56.8% of the variance and factor 2 has an eigenvalue of 1.62 and accounts for 13.5% of the variance. Only the Need for Reparations scale loaded on factor 2 from the unrotated factor matrix. All other scales and sub-scales loaded on factor 1 with loads ranging from a high of 0.8919 for NAS part A and a low of 0.6494 for Emotional-Susceptibility (see Table 15). The rotated factor

Table 13

Internal Consistency and Validity of the Revised Need for
Reparations Scale with the Current Sample

scale	<u>Internal Consistency</u>		<u>Validity</u>
	Alpha	Split Half	Concurrent
original	.80	.77	.33*
revised	.81	.85	.32*

Note: Concurrent validity assessed via correlations with Emotional-Susceptibility scale.

Table 14

NAS Scale and Subscale Intercorrelations

	Domains		
	Cognitive	Arousal	Behavioral
Cognitive			
Attentional Focus	.77		
Rumination	.85		
Hostile Attitude	.85		
Suspicion	.74		
Arousal	.82		
Intensity	.68	.87	
Duration	.70	.85	
Somatic	.68	.84	
Irritability	.73	.85	
Behavioral	.75	.86	
Impulsive Reaction	.61	.74	.88
Verbal Aggression	.70	.75	.87
Physical Confrontation	.65	.74	.90
Indirect Expression	.57	.70	.75
Part A	.91	.96	.94
Part B	.69	.74	.69
Total	.77	.81	.78

matrix changed the factor structure by moving Emotional-Susceptibility and Fear of Punishment to the second factor (see Table 15). These results were consistent with Caprara's second order factor analysis that identified two dimensions: Proneness to Aggression and Emotional Responsivity, with Emotional-Susceptibility, Fear of Punishment and Need for Reparations loading on a separate factor (Caprara et al., 1992).

Although the Caprara's multiple model of aggression receives some support, the above results did not support the contention that measures derived from specific theories of emotional aggression will result in differing assessment of aggression. Therefore, the null hypothesis can not be rejected.

Predictor Scales and Postdiction of Violence

Correlations between the predictors including the factors derived by Williams et al. (1996) and obtained by the current results, and criterion variables are presented in Table 16. The predictor variables had correlations ranging from 0.00 to 0.14 with the criterion measures developed from the incident offense: offense type, degree of harm and affective versus instrumental violence. The correlations were slightly stronger for the criminal history and Lifestyle Violence criterion variables with a few reaching significance. The Physical Aggression scale of the

Table 15

Principal Component Factor Loading for the Predictor Scales

<u>Index</u>	<u>Unrotated Factor Matrix</u>		<u>Rotated Factor Matrix</u>	
	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 1</u>	<u>Factor 2</u>
NAS Part A	.892	-.069	.849	.281
Irritability	.887	-.050	.838	.297
Dissipation-				
Rumination	.845	-.026	.789	.303
BPAQ Hostility	.818	-.150	.812	.177
NAS Part B	.798	.038	.721	.344
BPAQ Anger	.790	-.295	.843	.033
BPAQ Verbal	.771	-.230	.799	.086
BPAQ Physical	.769	-.386	.858	-.059
Fear of				
Punishment	.706	.559	.435	.789
Tolerance				
toward Violence	.694	.169	.574	.425
Emotional-				
Susceptibility	.649	.524	.396	.734
Need For				
Reparations	.089	.826	-.236	.796

BPAQ had the strongest correlation with criminal history at 0.28 (significant at $p < .001$, $N = 190$, uncorrected). Although the factors of the BPAQ derived from Williams et al. and from the current results did show a relationship with some criterion variable, they did not equal the performance of the factors described by Buss and Perry (1992). Although some of the correlations were significant, this was probably more a reflection of sample size than evidence of a strong relationship. Therefore, the results provided little evidence to support the use of self report anger inventories as predictors of violent behaviour.

To investigate the relationships further a series of 2 x 2 between-subject multivariate analysis of variance were performed on each of three aggression indices, NAS and its related subscales, BPAQ and its related subscales including those derived Williams et al. (1996), and the six Caprara scales. Independent variables were present violence (yes or no), coded from classification of offense criterion, and past violence (yes or no), coded from the criminal history criterion.

As determined by the use of Wilk's criterion to test relationships, the dependent variables from the NAS were not affected by previous violence ($F(2,185) = 0.18$ $p > .05$), current violence ($F(2,185) = 0.21$ $p > .05$), or interaction ($F(2,185) = 0.42$ $p > .05$). Similarly, the dependent variables

Table 16

Correlations Between the Predictor Scales and CriterionVariables

Predictors	Criterion Variables				
	1	2	3	4	5
BPAQ					
Total	0.12	0.09	0.11	0.20	0.18
Physical	0.10	0.07	0.10	0.28*	0.23*
Verbal	0.12	0.11	0.10	0.16	0.11
Anger	0.12	0.10	0.11	0.16	0.18
Hostility	0.09	0.06	0.08	0.06	0.08
Williams et al. (1996) BPAQ Factors					
Physical Aggression	0.11	0.10	0.11	0.22*	0.22*
Verbal Aggression	0.11	0.08	0.09	0.11	0.09
Current revised BPAQ and factors					
Total	0.10	0.08	0.09	0.17	0.16
Factor 1	0.14	0.09	0.13	0.16	0.14
Factor 2	0.04	0.05	0.04	0.22*	0.18
Factor 3	0.08	0.05	0.06	0.08	0.10
NAS					
Total	0.10	0.05	0.09	0.12	0.14
Part 1	0.12	0.09	0.11	0.18	0.20*
Part 2	0.05	0.03	0.06	0.06	0.10
Caprara					
Emotional-Susceptibility	0.10	0.06	0.11	0.09	0.14
Irritability	0.07	0.03	0.07	0.12	0.16
Dissipation-Rumination	0.00	-0.02	-0.01	0.03	0.08
Tolerance toward Violence	0.02	0.05	0.00	-0.07	-0.03
Fear of Punishment	0.06	0.03	0.05	0.08	0.09
Need for Reparations	0.05	0.03	0.06	-0.02	0.07

Note: Criterion variable : (1) Type of Offense, (2) Degree of Harm, (3) Motivation for Violence, (4) Criminal Violence, and (5) Lifestyle Violence.

* indicates significant at $p < .01$ (uncorrected).

from the BPAQ were not affected by previous violence $\{F(7,180) = 0.12 \text{ } p > .5\}$, current violence $\{F(7,180) = 0.56 \text{ } p > .05\}$, and interaction $\{F(7,180) = 0.89 \text{ } p > .05\}$. The dependent variables from the Caprara scales were, likewise, not affected by current violence $\{F(6,181) = 0.39 \text{ } p > .05\}$ and by interaction $\{F(6,181) = 0.95 \text{ } p > .05\}$. However, a modest association between the dependent variables and previous violence (no vs. yes) was found $\{F(6,181) = 2.36 \text{ } p < .05\}$. From a review of the univariate F-tests the Tolerance toward Violence was found to be associated with previous violence. A review of the distribution of scores reveals that low scores on Tolerance toward Violence were associated with past convictions for violent offenses.

In a second comparison participants were coded as violent ($N = 133$) or non violent ($N = 57$) based on the current offense and past convictions. A multivariate analysis was conducted that reveals a significant effect for violence $\{F(17,172) = 1.176 \text{ } p < .05\}$. A review of the univariate analysis reveals two predictor variables related to the presence of violence: the BPAQ physical aggression scale $\{F(1,188) = 5.00 \text{ } p < .05\}$, and the BPAQ physical aggression factor identified by Williams et al. (1996) $\{F(1,188) = 4.18 \text{ } p < .05\}$. A review of the subscales means reveals that violence is related to higher means on the two physical aggression subscales from the BPAQ.

A final analysis compared participants who had never committed a violent offense, those who had committed a violent offense in the past, and those who had committed both a current and a prior violent offense. As above, a multivariate analysis was conducted and a significant effect for level of violent criminal involvement was observed, $\{F(30,346) = 1.58 \text{ } p < .05\}$. A review of the univariate analysis identified only two predictor variables, the BPAQ subscale of physical aggression $\{F(2,187) = 4.07 \text{ } p < .05\}$ and Williams' physical aggression factor from the BPAQ $\{F(2,187) = 3.03 \text{ } p = .05\}$. again higher mean scores on the physical aggression indices were associated with a record of more violence.

The dichotomous variables: current violence, past violence, and any violence, correlations with the predictor scales are summarized in Table 17. Correlations between predictor scales and actual number of violent convictions are also included in the Table 17.

Actuarial Indices

As stated earlier the SIR was not correlated to incident offense criterion variables. It was, however, significantly inversely correlated ($p < .001$) with both historical criterion variables: criminal history of violence and life style violence. The LSI-R was correlated with two of the incident offense criterion variables: classification

of offense and affective versus instrumental violence ($p < .05$) as well as the historical criterion variables ($p < .001$) (see table 4). Both the LSI-R and the SIR include criminal history information in the calculation of their respective scores that may have artificially inflated their correlations with criminal history criterion variables. Therefore, the analysis was repeated with a modified LSI-R score that did not include criminal history information. The results found a slight decrease in the magnitude of the correlations that did not affect the level of significance. The lone exception was the correlation between the modified LSI-R and classification of offense where the correlation failed to meet significance.

Table 18 presents the correlations found between the LSI-R and the SIR scales, and the predictor variables. All but a few are significant ($p < .05$, uncorrected) and many are modest. The significant correlations range from -0.16 between NAS part B and SIR to 0.41 between BPAQ physical aggression subscale and LSI-R. The Caprara scales of Tolerance toward Violence and Need for Reparations scales were unrelated to either the LSI-R or the SIR. The modified LSI-R score was also correlated with the predictor scales and only slight modifications in the overall correlations were observed.

Table 17

Correlations Between the Predictor Scales and Other
Violence Indices

Predictors	Violence			
	Current	Past	Any	Conviction
BPAQ				
Total	0.18	0.08	0.14	0.14
Physical	0.18	0.15	0.16	0.17
Verbal	0.17	0.09	0.14	0.08
Anger	0.16	0.06	0.14	0.16
Hostility	0.14	-0.03	0.07	0.08
Williams et al. (1997) BPAQ Factors				
Physical Aggression	0.18	0.11	0.15	0.17
Verbal Aggression	0.16	0.01	0.10	0.09
NAS				
Total	0.14	0.00	0.03	0.06
Part 1	0.14	0.07	0.10	0.08
Part 2	0.09	-0.03	0.00	0.00
Caprara				
Emotional-Susceptibility	0.14	0.02	0.07	0.13
Irritability	0.12	-0.02	0.04	0.11
Dissipation-Rumination	0.03	-0.11	-0.03	0.03
Tolerance toward Violence	0.03	-0.19	-0.09	-0.02
Fear of Punishment	0.12	0.02	0.07	0.09
Need for Reparations	0.04	-0.02	0.00	0.00

Note: Current Violence, Past Violence, and Any Violence
 (past and/or current) are dichotomous variables.

Violent Convictions represents the total number of violent
 convictions registered against the participant.

To investigate the relationship between the actuarial indices and the predictor scales with the postdiction of violence a number discriminant analyses were performed using the same categorical classifications as used in the multivariate analysis reported above. From the first analysis one discriminant function was calculated with a $\chi^2(15) = 41.410$, $p. < .001$. A review of the loading matrix of correlations between predictor variables and discriminant function, as seen in Table 19, suggested that the best predictors for distinguishing between participants with a violent incident offense or not were the LSI-R, the SIR and the physical aggression scale from the BPAQ. Participants with violent offenses have higher LSI-R and Physical aggression scores and lower SIR scores. The second analysis repeated the first using the modified LSI-R score rather than the LSI-R and produced virtually the same discriminant function with a $\chi^2(15) = 37.867$, $p. < .001$. The loading matrix, summarized in Table 19, also suggests that the best predictors were the modified LSI-R, the SIR and the physical aggression scale from the BPAQ. This pattern continued for discriminant analysis that used past violence (yes or no) and no violence, past violence and past and present violence as categorical variables. Both analyses produced one significant discriminant function with $\chi^2(15) = 31.240$, $p. < .01$.

Table 18

Correlations Between the Predictors, and Actuarial Indices

Predictors	Actuarial Indices		
	SIR	LSI-R	LSI-M*
BPAQ			
Total	-0.28	0.39	0.38
Physical	-0.32	0.41	0.39
Verbal	-0.23	0.30	0.29
Anger	-0.22	0.35	0.29
Hostility	-0.20	0.29	0.30
Williams et al. (1996) BPAQ factors			
Physical Aggression	-0.28	0.39	0.38
Verbal Aggression	-0.23	0.32	0.33
NAS			
Total	-0.18	0.29	0.29
Part A	-0.24	0.37	0.37
Part B	-0.16	0.27	0.28
Caprara Scales			
Emotional-Susceptibility	-0.17	0.31	0.32
Irritability	-0.23	0.34	0.34
Dissipation-Rumination	-0.22	0.32	0.32
Tolerance toward Violence	0.01	0.10	0.11
Fear of Punishment	-0.23	0.27	0.27
Need for Reparations	0.13	-0.14	-0.13

Note: * LSI-R modified by the removal of references to
criminal histories

$\chi^2(30) = 55.380$ $p. < .01$ respectively. Each loading matrix is summarized in Table 19.

To investigate the effectiveness of the discriminant functions two further analysis were completed using current violence as categorical variable and the LSI-R, the modified LSI-R score, the SIR, and the physical aggression scale as predictor variables. The purpose of the analyses was to determine the accuracy of classification of cases by each function. The first analysis with the LSI-R produced one significant discriminant function $\chi^2(3) = 21.410$, $p. = .0001$. As seen in Table 20, non-violent offenders were accurately classified 87.5% of the time compared to violent offenders who were only accurately classified 38.6% of the time. When compared to the classification by just LSI-R scores the discriminant function demonstrates a slight non significant improvement (see Table 20) in the classification of violent offenders. The discriminant function that used the modified LSI-R score as a predictor variable produced one significant function $\chi^2(3) = 17.567$, $p. = .0005$. The same classification pattern as found when using the full LSI-R score was observed with the modified LSI-R function. The results are also presented in Table 20.

Comparative Results

Williams et al. (1996) dichotomized their sample on the level of aggressiveness in the offenses of their subjects

Table 19

Correlations of Predictor Variables with Discriminant
Functions

Variable	Discriminant Function			
	First	Second	Third	Forth
LSI-R	.669		.702	.694
LSI-M**		.620		
SIR	-.438	-.460	-.445	-.445
Physical (BPAQ)	.380	.399	.375	.381
Physical (W)	.317	.333	.343	.328
BPAQ Total	.264	.278	.335	.290
Verbal (BPAQ)	.256	.269	.322	.280
NAS Part A	.237	.249	.234	.237
NAS Total	.234	.246	.058	.176
Emotional-Susceptibility	.204	.214	.158	.189
Anger (BPAQ)	.191	.200	.326	.238
Verbal (W)	.153	.161	.241	.184
Fear of Punishment	.147	.155	.152	.150
NAS Part B	.119	.125	.001	.079
Irritability	.114	.121	.101	.111
Dissipation-Rumination	-.089	-.093	-.075	-.085
Hostility (BPAQ)	.084	.088	.162	.111

Note: First function used current violence as dependent variable, Second function used current violence dependent variable and the modified LSI-R as predictor, Third function used past violence as dependent variable, and Forth function used both past and current violence as dependent variables.

** LSI-R modified by the removal of references to criminal histories.

(BPAQ) scales from Buss and Perry (1992).

(W) factor from Williams et al. (1996).

Table 20

Discriminant Analysis Classification Matrix

Group	<u>Number of Cases Classified into Groups</u>		
	Non-violent	Violent	% Correct
Actual	120	70	
LSI-R, SIR & Physical Aggression			
Non-violent	105	15	
	87.5%	12.5%	
Violent	43	27	
	61.4%	38.6%	69.47%
LSI-R			
Non-violent	106	14	
	88.3%	11.7%	
Violent	46	24	
	65.7%	34.3%	68.42%
LSI-R*, SIR, and Physical Aggression			
Non-violent	106	14	
	88.3%	11.7%	
Violent	50	20	
	71.4%	28.6%	66.32%
LSI-R*			
Non-violent	110	10	
	91.7%	8.3%	
Violent	53	17	
	75.7%	24.3%	66.84%

Note: LSI-R* modified LSI-R by the removal of criminal history information

and found no differences between the groups for total BPAQ or for their two factors. In this study participants were coded on their most serious incident offense as property offenders, robbery offenders and assaultive offenders. To enable comparison between Williams' et al. results and the present results, property offenders were classified as non-violent and all others as violent. T-test for independent samples were computed. Violent offenders had significantly higher mean scores on both Williams' factors and total BPAQ score than non-violent offenders. The results are shown in Table 21. Between sample comparisons are summarized in Table 22. The non-violent sample from the present study scored lower on the BPAQ than both non-aggressive and aggressive samples from Williams et al. study. However, the current violent sample scored lower only on the physical aggression factor. The number of aggressive offenders in the Williams' et al. sample, 22%, compared to 58% in the current sample may account for the differences.

Novaco (1994) reports that the NAS part A and Caprara's Irritability scale correlate at 0.34 and 0.33 respectively with the number of violent convictions for psychiatric in-patients. Therefore, in addition to the originally planned criterion variables ad hoc calculations of total number of convictions, and the number of violent convictions. Means and SD are summarized in Table 23. Also the ratio of violent

convictions to total convictions was calculated for each participant. Violent convictions included all offenses directed at a person, including point or threaten with a weapon, but not possession of a weapon. The correlation between violent convictions and NAS part A was 0.12 and between violent convictions and Irritability was 0.15. Novaco's observed relationship between certain self report measures and violent convictions was not found in the present sample. Sample differences may have accounted for the lack of replication.

Ad Hoc Comparisons

Additional correlations were computed between the ad hoc variables and the predictors scales and actuarial indices. The findings are summarized in Table 24. As was the case with the original criterion variables the physical aggression factors derived from the BPAQ were the only predictors significantly related to violent convictions. Again, not surprisingly, the LSI-R and the SIR were strongly correlated to the number of convictions and number of violent convictions. The SIR scale was also correlated with the ratio of violent convictions to total convictions.

Table 21

Comparisons of Means between Violent and Non-violent
Offenders

Group	Williams et al (1996) BPAQ Factors		
	Physical Aggression	Verbal Aggression	Total
Non-violent (n = 80)			
Mean	28.09	26.08	63.36
(SD)	(11.29)	(9.78)	(20.28)
Violent (n = 110)			
Mean	32.70	29.39	71.69
(SD)	(13.28)	(10.33)	(23.29)
T value	2.59*	2.27**	2.64*

Note: * $p < .01$.

** $p < .05$.

Table 22

Comparisons Between BPAQ Reported and Observed Means

Variable	Violent				Non-violent			
	Reported		Observed		Reported		Observed	
	Mean (SD)	Mean (SD)	Mean (SD)	T-test (p)	Mean (SD)	Mean (SD)	Mean (SD)	T-test (p)
Physical Aggression	40.81 (11.47)	32.70 (13.28)	3.148 (.002)		40.51 (12.49)	28.09 (11.29)	7.141 (.000)	
Verbal Aggression	32.62 (8.34)	29.39 (10.33)	NS		32.06 (9.94)	26.08 (9.78)	4.145 (.000)	
Total Score	73.43 (17.90)	71.69 (23.29)	NS		72.58 (20.62)	63.36 (20.28)	3.081 (.002)	
N	110	27			80	97		

Note: Reported results from Williams et al. (1996).

Table 23

Distribution of the Total Number of Convictions and Number
of Violent Convictions

<u>Statistic</u>	<u>Convictions</u>	
	<u>Total</u>	<u>Violent</u>
Mean	23.38	2.96
SD	(23.59)	(3.20)
Minimum	1	0
Maximum	208	14

Table 24

Correlations for AD HOC Comparisons

Predictor	Convictions		
	Total	Violent	Ratio*
SIR	-0.53	-0.28	0.25
LSI-R	0.41	0.27	-0.16
LSI-M**	0.36	0.24	-0.15
BPAQ			
Total	0.14	0.18	0.01
Physical	0.17	0.27	0.01
Verbal	0.08	0.14	0.07
Anger	0.16	0.16	0.01
Hostility	0.08	0.05	-0.02
Williams et al. (1996) BPAQ factors			
Physical Aggression	0.17	0.24	0.03
Verbal Aggression	0.09	0.09	0.01
NAS			
Total	0.06	0.16	0.03
Part A	0.08	0.12	0.02
Part B	-0.01	0.08	-0.02
Caprara Scales			
Emotional-Susceptibility	0.13	0.12	0.02
Irritability	0.11	0.15	0.01
Dissipation-Rumination	0.03	0.01	-0.07
Tolerance toward Violence	-0.02	-0.05	-0.02
Fear of Punishment	0.09	0.11	0.02
Need for Reparations	0.00	-0.01	0.08

Note: * Ratio represents the ratio of violent conviction to total convictions.

** LSI-R modified by the removal of references to criminal histories.

bold significant at $p > .005$ (uncorrected).

DISCUSSION

Sample Characteristics

Results that dealt with the background characteristics of participants indicated that they were not substantially different from those inmates who were admitted to the MAU during the time frames of data collection. Therefore, the participants were representative of federal inmates sentenced in Ontario.

Predictor Scales

Internal Consistency

Internal consistencies of the predictor scales: NAS, BPAQ, and the six Caprara scales, were found to meet or exceed those reported in the literature for the respective scales. The size of coefficient alpha has been reported to be related to the clinical significance of an instrument (Cicchetti, 1994). With alphas in the range of 0.80 to 0.97 this would indicate that the clinical significance of the predictor scales was good to excellent. However, the computerized presentation of items utilized in the present study has been shown to increase the internal consistency of an instrument through improved standardization of presentation across subjects (Kroner et al., 1997). Therefore, the strong internal consistency may reflect the method of presentation rather than the clinical significance of the instruments.

Alpha or internal consistency has also been interpreted as a reliability measure of an instrument. The current results indicate that the instruments used: NAS, BPAQ, And Caprara's scales, maintained their reliability with the current offender sample.

Validity

Predictor scale validity was assessed in two ways; concurrent validity and factor validity. Concurrent validity was derived from intercorrelations among the different predictor scales. The results indicated that the scales were highly intercorrelated with the exception of Caprara's Need for Reparations scale. The results were consistent with the literature (Caprara, et al., 1992; Mills, et al., 1997; Novaco, 1994; Williams et al., 1996) and provided additional support for the concurrent validity for each scale as assessment instruments for the constructs of anger and aggression. The exception of Caprara's Need for Reparation scale was to be expected as the Need for Reparation scales has been described as an empathy scale rather than a scale measuring aggression (Caprara, et al., 1992).

Factorial validity is the replication of factor structure with different populations (Cicchetti, 1994), and was assessed for each of the predictor scales. The methods of assessment of factor validity varied for each scale in order to be consistent with the factor analysis employed by

the scale authors. For the most part the original factor structure was confirmed. However, there was one notable exception.

Buss and Perry (1992) reported a four-factor solution for the BPAQ. In a subsequent investigation of this four-factor solution Williams et al. (1996) found a two-factor solution was a better statistical fit for their data than the original four-factor solution. A confirmatory factor analysis with the present results was unable to confirm the four-factor solution of Buss and Perry, and provided only modest support for the Williams et al. two-factor solution. An exploratory principal component analysis with varimax rotation conducted on the current results found a three-factor solution as the best statistical fit for the results. Measures of internal consistency and concurrent validity for the three-factor solution were consistent with those reported for both the two and four factor solutions.

Kroner, Reddon, and Serin (1992) have reported similar problems replicating the factor structure of Siegal's (1986) Multidimensional Anger Inventory with an inmate sample. Also, Kroner and Reddon (1992) were unable to completely replicate the factor structure of the Anger Expression Scale (AX; Spielberger et al., 1986) and the State Trait Anger Scale (STAS; Spielberger, Jacobs, Russell, and Crane, 1983) with an inmate sample. Kroner and his associates argued that

the factor structure of the anger inventories is based on subtle semantic differences among rather complex items. The original test development samples of university students had no difficulties with the subtle interpretation of items, whereas inmate samples lack the cognitive sophistication to make these distinctions. Similarly the same interpretation can be applied to the anger inventories used in the present study. However, recent evidence has shown that the majority of federal inmates in Ontario are functionally illiterate (Muirhead and Rhodes, 1997). The lack of reading skills of many inmates may have contributed to the failure to replicate factor structures obtained with university students for this test.

It was also observed (and will be discussed later in this chapter) that the original four factors of the BPAQ had stronger correlations with the current criterion variables than either of Williams' et al. factors or the factors defined by the present results. It would appear that the failure to statistically replicate the BPAQ factor structure has not reduced the clinical application of the original factors of the BPAQ with inmate samples.

Standardization

In the absence of empirically established standardized norms, many tests provide "user norms as a descriptive statistic based on a group of test takers. Results from

other test takers may vary due to gender, age, occupation, and so on" (Nelson, 1994). The current results demonstrated this pattern. For both the NAS and BPAQ the present inmate sample demonstrated considerably lower means than reported for the NAS' psychiatric hospital inpatient sample and the BPAQ's university student sample. The current inmate sample means were lower on the physical aggression and verbal aggression subscales of the BPAQ than the offender means provided by Williams et al. (1996) for the same subscales. The differences may be explained by the type of offender population sampled. Williams et al. randomly selected participants who had been charged and incarcerated awaiting trial in a large metropolitan area of the southern United States. The present sample was generated from the continuous admission of individuals convicted and sentenced to a term of incarceration exceeding 2 years or returned to custody for violating a conditional release. The higher general anxiety level associated with awaiting trial compared to being convicted and starting a sentence may account for the higher scores on the BPAQ in the Williams sample than the present sample (Mills et al., 1997). However, anxiety cannot account for differences between the current inmate sample and the psychiatric sample hospital inpatient norms on the NAS and between the current inmate sample and the university

student norms reported by Buss and Perry (1992) for the BPAQ.

Incarcerated offenders are notorious for manipulating the results of self report inventories (Kroner and Weeks, 1997). Lanion (1993) demonstrated that differences on sexual deviance scales between admitters and non admitters convicted sex offenders was due to increased use of defensiveness as measured by the MMPI by the non admitter group. Similar results were obtained by Kroner and Weeks (1997) between admitters and non admitters on the use of the Balanced Inventory of Desirable Responding (BIDR; Paulaus, 1984) scale, denial of the negative. A second construct in the BIDR is impression management which is designed to measure responding directed at creating a favourable impression. Kroner and Weeks observed that inmates early in their sentence had higher impression management scores than inmates applying for early release by parole. It would appear that inmates beginning their sentences are trying "to put their best foot forward" so to speak. The combination of defensive posturing and best foot forward may account for the lower means observed for the NAS and BPAQ than reported for their respective psychiatric inpatients and university student samples that had no obvious reason to manipulate their responses.

Similar arguments can be made to explain the differences between the means described by Caprara and the current results. Only two of the Caprara scales were accompanied by normative data obtained from a North American university student sample, Fear of Punishment and Need for Reparation. These scales were developed to measure Caprara's (Caprara, et al., 1992) bimodal concept of guilt. Both scales are scored so that higher scores indicate more remorse for one's actions and empathy for others. These characteristics are considered deficient in many inmates (Andrews and Bonta, 1994, Blackburn, 1993; Hare, 1990). The higher inmate means scores observed on both scales may reflect the impression management of the inmate participants. To put their best foot forward inmates would over endorse what they considered to be prosocial attitudes, elevating their scores.

Summary

The predictor scales used in the current study were relatively new developments with little reliability and validity data from samples other than the original developmental samples. The current results found the scales to be reliable, as inferred from coefficient alpha, and valid, as assessed by factorial and concurrent validity. However, the current inmate participant means were generally lower than those reported previously for the instruments.

With wider application of the measures and increased normative data these differences may diminish. The problem remains that with new instruments group specific norms need to be generated. The utility of the instrument should be derived from these group specific norms until large general norms are available.

Comparison of the Models of Aggression

The null hypothesis that there is no difference between the theoretical positions of Novaco (1994) and Berkowitz (1983, 1990) as measured by the instruments that were examined cannot be rejected. The instruments were highly correlated to one another and unrelated to level of violence in the incident offense. Two possible explanations may account for the lack of differentiation between the instruments.

First, the instruments themselves were not representative of the theoretical position they were purported to reflect. Novaco (1994) developed the NAS directly from his theoretical position on anger and anger expression. The structure of the items and the a priori domains and subscales reflect this theoretical position on anger. On the other hand, neither the BPAQ nor the Caprara scales were directly derived from Berkowitz's (1983, 1990) model of negative affect and anger. The BPAQ represents a refinement of the Buss and Durkee's Hostility Inventory

(1957) that was an atheoretical compilation of items which according to the authors assessed subclasses of hostility and aggression typically found in clinical presentations. Factor analysis of the Hostility Inventory revealed a two factor solution; an hostility factor and a motor component. These subclasses of hostility which made up the motor component are described by Buss and Durkee as expression of negative affect. The Buss and Perry (1992) revision of the Hostility Inventory included a number of the original items and their subscales which continue to reflect the effects negative affect has on anger and aggression. The development of the Caprara scales was the result of an unsuccessful attempt to validate the Hostility Inventory with an Italian sample. Caprara acknowledges the influence Berkowitz's theory had on his scale development (Caprara et al., 1989; Caprara et al., 1987). However, in his most recent writings (Caprara, Barbaralli, Pasterelli, and Feriguni, 1994) Caprara's current theoretical position indicated a cognitive orientation similar to that of Novaco rather than a dualist position as represented by Berkowitz. Therefore, the lack of scale concordance with the Berkowitz model of anger, especially with Caprara's apparent cognitive orientation may explain the lack of differentiation between the methods of appraisal of anger used in the present study.

A second explanation is that the scales assessed properties of the models that are common to both models. This explanation has intrinsically more conceptual promise for the study of emotions and its use to predict dangerousness. The models differ in their explanation of the development of the emotional arousal needed to drive an aggressive response. Based on traditional cognitive models Novaco (1994) contends that cognitive labeling occurs as a highly automated and intrinsic part of the perceptual process. The individual's predisposition and current emotional state then influence this automatic process labeling an event as provocative. Higher order cognitive mediation or conscious interventions were explicitly stated in this process and can occur at any time during the automatic activational phase.

The dualistic approach of Berkowitz (1983, 1990, 1993) contends that visceral responses are either negative or positive. Negative affective responses generate a flight or fight response that can be expressed as anger or aggression. Visceral activation and negative affect form associationistic networks that produce the behaviour reflective of a flight or fight response. These associations can and are influenced by preexisting conditions and higher order cognitive processes. Clearly both models share the

view that higher order cognitive interventions influence the emotional response.

Lang (1993) reports that there are three basic output systems to an emotional response: behavioural acts, physiological mobilization, and expressive/ evaluative language. The latter refers to the associated semantic knowledge required to explain one's behaviour motivation. Therefore, the investigation of an emotional response via interview or questionnaire would reflect Lang's semantic knowledge. In the current context the anger inventories measured the outcome appraisal skills of the individual, but not necessarily the underlying mechanisms that created the output. Therefore, instruments that measure only output appraisal of an emotional response would be unable to differentiate models on the primary mechanisms that produced the emotional response. The current results were consistent with this view. Thus it is possible that the scales used in the current study assessed a higher order cognitive function of semantic knowledge rather than the underlying arousal mechanisms of their respective theoretical orientation.

Postdiction of Violent Criminal Behaviour

Predictor Scales

The current results failed to find any relationship between anger inventories and the incident offense criterion variables: Type of Offense, Degree of Harm, and Motivation

for Violence, or classifying participants as violent or non-violent based on the incident offense. These results were consistent with other studies that have used anger inventories to identify offenders convicted of violent offenses (Gembora, 1986; Loza, 1991; Selby, 1984). The current study as well as the cited studies used a postdictive design to identify relationships between predictors and criterion variables. The base rate in a postdictive study with offenders is always 100%, all participants have committed an offense. In a predictive study the base rate is the percentage of those who fail over time at risk. This percentage or ratio can vary tremendously depending on the time interval measured. As a result, postdictive studies tend to over-estimate the relationship between a predictor and criterion. The failure of the NAS, BPAQ and Caprara's scales to identify violent offenders in a postdictive design does not bode well for the use of these self report anger inventories as predictive instruments for Criminal Violence.

Recently anger has been shown to be a proximal cue to criminal activity (Zamble and Quinsey, 1996). These authors assessed anger quite differently from the present study. Zamble and Quinsey asked offenders what they felt immediately prior to committing their incident offense. The emotion most commonly quoted was anger. It was concluded

that anger enabled criminal behaviour. Research with young offenders has previously demonstrated this relationship between anger or negative affect and antisocial behaviour (Agnew, 1992, 1994; Agnew and White, 1992; Caspi, et al., 1994). Anger or negative affect then can be considered one of the transitory psychological states that are related to episodes of violent behaviour (Holland's et al., 1982). Self report anger inventories look at anger as a lifestyle variable or personality trait (Buss and Durkee, 1957; Novaco, 1994) rather than a transitory psychological state or emotion. Personality traits describe a likelihood to behave in a generally consistent manner over time in a wide range of situations. Rarely can you predict a specific event from a person's personality traits. With this in mind it would be unrealistic to expect a personality trait of anger to predict a specific violent conviction.

To carry this argument further, assessments of personality style anger should have a better relationship to a lifestyle propensity for violence and criminal histories of violence than any single event. Generally this was the case, however, many of the increments in the magnitude of relationships were minimal. Three measures of physical aggression derived from the BPAQ: the physical aggression scale (Buss and Perry, 1992), the physical aggression factor (Williams et al., 1996), and factor two from the current

results, were related to the Criminal Violence criterion. Three subscales: physical aggression scale, physical aggression factor, and part A of the NAS were related to the Lifestyle Violence criterion. However, difficulties in obtaining sufficient information to accurately assess an individual's lifestyle may have compromised the latter results. The physical aggression scale and the physical aggression factor were also related to statistical categories of past violence, and past and present violence. It appears that endorsement of physical aggressive items of the BPAQ was indicative of a life long propensity for violence.

Actuarial Indices

Both the SIR and the LSI-R were related to the historical criterion variables: Criminal Violence, and Lifestyle Violence. This is to be expected given that both the SIR and the LSI-R scores are partially dependent on Criminal Violence histories. However, when the influence of criminal history variables was removed from the LSI-R scores the relationship with Criminal Violence and Lifestyle Violence was maintained. This result provides additional support for Gendreau's et al. (1996) conclusion about the value of dynamic variables in the prediction of recidivism.

The relationship between the actuarial indices and the incident offense criterion variables was not as consistent.

The SIR was not related to the incident criterion variables: Type of Offense, Degree of Harm, or Motivation for Violence. These results were consistent with the original developmental work by Nuffield (1982) and a re-evaluation by Hann and Harman (1992a) that found that the SIR was not predictive of violent recidivism. Recent findings of a relationship between the SIR and violent reoffending (Bonta et al., 1996; Rowe, 1995) were not replicated with the current results. The LSI-R was related to Type of Offense, and Motivation for Violence. This result replicated Loza and Simourd (1994), who found that violent offenders had higher LSI-R scores. The results also provide limited support from a postdictive perspective for Rowe's (1995) observation that the LSI-R may be predictive of violent recidivism as well as general recidivism. However, no relationship was found between Type of Offense and the LSI-R when the effects of criminal histories were removed from the LSI-R scores. It would appear that the relationship observed between the LSI-R and the Type of Offense was dependent on criminal history variables. This reaffirms Monahan's (1981) argument that past offenses are one of the better predictors of future violent offending.

The SIR, the LSI-R and the predictor scales (with the exception of Tolerance toward Violence and Need for Reparations) were correlated. Higher predictor scale scores

were indicative of a greater risk to reoffend as indicated by the actuarial indices. This interaction was addressed by a number of discriminant analyses investigating current violence, past violence, and current and past violence. All the analyses suggested that the best predictors were (in order): the LSI-R, the SIR, and the physical aggression scale from the BPAQ. The overall accuracy of the discriminant function that addressed current violent convictions was 69.5%, and it was able to correctly identify 38.6% of participants who had committed a violent offense. The accuracy of the LSI-R by itself was 68.4% with 34.4% correctly identified violent offenders. The addition of an assessment of physical aggression thus increases the identification of violent offenders.

Anger or negative affect as a personality trait by itself was unable to identify violent inmates. This may be a reflection of the problems, as discussed earlier, associated with self report instruments when used with inmate samples. However, current theory of criminal conduct describes an interaction between numerous factors that contribute to criminal behaviour (Andrews and Bonta, 1994). Major risk factors identified by Andrews and Bonta include antisocial/procriminal attitudes, procriminal associates, temperament, prior antisocial behaviour, dysfunctional family and educational/employment problems. A number of

these factors are assessed by the LSI-R, however, temperament is not fully explored by the LSI-R. Consistent with the position on prediction of Grove and Meehl (1996) when a temperament variable, anger, is consistently assessed and weighted, then combined with another weighting system; the LSI-R, even in a simple additive function, the results improve prediction. This was found to be the case with the current results.

Comments on the Replications

The current design allowed for direct replication of a validity study on the BPAQ and a partial replication of the development study of the NAS. Also, the design provided a basis to assess the theoretical position of Caprara's model of aggression (Caprara et al., 1992).

Contrary to Williams et al. (1996), the current results did demonstrate significant differences on the BPAQ for violent and non violent offenders with violent offenders having higher scores than non-violent offenders on physical aggression and verbal aggression factors as well as total score. When the means of each study are compared, the non-violent participants in the current study were found to have lower means on both factors of the BPAQ and the total score than all other groups. Also, the violent participants in the present study had lower mean scores on the physical aggression factor than both the aggressive and non-

aggressive Williams' et al. subjects. The generally higher overall scores on the BPAQ and derived factor structure found in that study reaffirm an earlier contention that the Williams et al. sample had higher levels of general anxiety than the current sample. Increased anxiety has been shown to increase self report endorsement of undesirable characteristics (Mills et al., 1997).

A partial replication of Novaco's (1994) NAS validation study was extrapolated from the current design. The same relationship between the NAS part A and the Irritability scale was observed in the current results. However, the relationship between the NAS part A and previous violent convictions and between the Irritability scale and previous violent convictions was not. Sample differences again may account for the disparity of results. Novaco used psychiatric inpatients, whereas the current study used federal inmates that did not include inmates with active psychiatric conditions. These inmates were unavailable for the study. Another consideration is the effect that psychiatric conditions, in particular Schizophrenia, has on the propensity for violence. A diagnosis of schizophrenia in the general population has been found to increase the probability of violent behaviour (Link and Stueve, 1994). However, in violent populations the diagnosis of Schizophrenia has been found to reduce the likelihood of

violent behaviour (Harris et al., 1993). The lack of overlap between the samples may account for the differences observed.

The present design also allowed for a brief examination of the Caprara et al. (1994) model of aggression. Caprara and his associates conceptualize aggressive behaviour as comprising of two second order factors: proneness to aggression and emotional responsiveness. Proneness to aggression is a factor that is indicative of a willingness to use aggression, whereas emotional responsiveness is the reactivity to negative emotions. If both are high, the likelihood of emotional aggression is high. Unfortunately the current results did not support Caprara's hypothesis. Two major differences between Caprara's et al. (1994) design and the current one may account for the failure of the current results to support the model. The first is sample differences. Caprara used university students versus the present sample of Canadian federal inmates. The differences and difficulties that were discussed earlier apply. Second, Caprara used a type of Buss aggression machine to assess proneness to increased violence. The current study used actual criminal behaviours. The presence of a violent criminal conviction is a yes or no phenomenon and lacks the variability capable with a aggression machine. As a result, the present results are not sensitive enough to identify the

differences obtained by Caprara. Although the current results did not support the model, others (Agnew, 1992, 1994; Agnew and White, 1992; Zamble and Quinsey, 1996) present similar ideas concerning the interaction of reactive negative affect and opportunity.

Conclusions

Although the anger inventories were found to be reliable and valid, their effectiveness in identifying criminal violence was not substantiated. In particular the effectiveness of the Caprara scales in identifying more aggressive university students was not transferred to incarcerated offenders. Although his model has some intuitive appeal and conceptual support, his scales were ineffective with offenders. The relationship between higher NAS scores and violent criminal convictions was not replicated with the present sample of federal offenders. The ability to identify individuals with potential for institutional misbehaviour was not examined in the current design and it must be left for future studies to determine if the NAS is as effective with inmates as it is with inpatients in this regard. Although confirmatory factor analysis failed to support the Buss and Perry (1992) factor structure of the BPAQ, one of the original factors proved to be the only predictor variable that was related to Criminal Violence. The physical aggression subscale of the BPAQ

followed the LSI-R and the SIR as the best predictors in a discriminant function that identified, with 38% accuracy, violent offenders.

Also the anger inventories were unable to discriminate between Novaco's (1994) and Berkowitz's (1983,1990) models of aggression. This was deemed to be due to an intrinsic problem with self report inventories that attempt to assess emotion. Self report inventories can only access the evaluative/expressive language of an emotional response (Lang, 1993) not the arousal mechanisms and cognitive interactions that lead to the response. Therefore, an alternative to self report instruments will need to be developed to explore differences between the models.

The strong correlation between the LSI-R and past criminal violence even when the influence of criminal history variable was removed from the LSI-R scores confirms a previous note that violent inmates had higher LSI-R scores than non-violent inmates (Loza and Simourd, 1994). The LSI-R was also correlated to a lesser extent, with current violence, supporting recent observations that the LSI-R may be effective in predicting criminal violence (Rowe, 1995).

The main contribution of the present study is in the area of prediction of criminal violence in concert with a social psychology of criminal conduct (Andrews and Bonta, 1994). The present results have demonstrated that the

quantification of a major risk factor for criminal conduct, temperament, can add to the predictive accuracy of an instrument based on other risk factors.

Future research needs to focus on the role anger and negative affect plays in the offense process, especially violent offenses. Is anger a distal cue to violent offending as indicated by the current interactive results or is it a proximal cue as reported by Zamble and Quinsey (1996)? Such clarification could lead to increased accuracy in the prediction of criminal violence. Although Grove and Meehl (1996) emphasize process over information, the use of theoretically sound and appropriate information in a statistical prediction model would maximize predictive accuracy potential.

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APPENDIX A

CAPRARA'S ORIGINAL SCALES

IRRITABILITY

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by choosing an appropriate number for each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below.

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. I easily fly off the handle with those who don't listen or understand.
2. I am often in a bad mood.
3. Usually when someone shows a lack of respect for me, I let it go by.
4. I have never been touchy.

5. It makes my blood boil to have somebody make fun of me.
6. I think I have a lot of patience.
7. When I am irritated I need to vent my feelings
immediately.
8. When I am tired I easily lose control.
9. I think I am rather touchy.
10. When I am irritated I can't tolerate discussions.
11. I could not put anyone in his place, even if it were
necessary.
12. I can't think of any good reason for resorting to
violence.
13. I often feel like a powder keg ready to explode.
14. I seldom strike back even if someone hits me first.
15. I can't help being a little rude to people I don't like.
16. Sometimes when I am angry I lose control over my
actions.
17. I do not know of anyone who would wish to harm me.
18. Sometimes I really want to pick a fight.
19. I do not like to make practical jokes.
20. When I am right, I am right.
21. I never get mad enough to throw things.
22. When someone raises his voice I raise mine higher.
23. Sometimes people bother me just by being around.
24. Some people irritate me if they just open their mouth.
25. Sometimes I shout, hit and kick and let off steam.

- 26. I don't think I am a very tolerant person.
- 27. Even when I am very irritated I never swear.
- 28. It is others who provoke my aggression.
- 29. Whoever insults me or my family is looking for trouble.
- 30. It takes very little for things to bug me.

EMOTIONAL-SUSCEPTABILITY

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by placing an appropriate number before each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below.

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

- 1. Fear of failure worries me more than necessary.
- 2. I like to be the center of attention.
- 3. I am too sensitive to criticism.
- 4. When I am afraid I completely lose control.
- 5. I often have the feeling others pity me.
- 6. I don't complain about what life has given me.
- 7. I often feel more tired in the morning than when I go to bed.
- 8. I am not afraid of loneliness.
- 9. More than once I have been moved to tears at the movies.

10. I easily get involved when someone tells me their troubles.
11. Sometimes I feel sad without any reason.
12. I have often felt lonely.
13. I often feel inadequate.
14. I am not scared of the dark.
15. Even in emergency situations I am able to control my reactions.
16. I often feel vulnerable and defenseless.
17. When I feel low I cry over nothing.
18. When I am waiting for someone I can't keep still, I pace up and down.
19. Sometimes I feel moved over nothing.
20. I have always felt challenged by difficult situations.
21. Strong emotions nearly paralyze me.
22. I can't hold back my tears when someone tells sad stories.
23. Sometimes I cry for no reason.
24. I often feel like I can't go on.
25. I often feel I am not up to situations.
26. I always try to meet new people.
27. I feel rather uneasy when someone stares at me.
28. I have often felt upset.
29. I like new things.
30. Sometimes I feel I am about to explode.

31. I often feel depressed.
32. Sometimes I feel on edge.
33. I very seldom lose my temper.
34. I feel down when others don't approve of me.
35. I often feel tense and nervous.
36. My voice trembles when I am very touched.
37. I tend to trust others.
38. When I am moved I find it difficult to hold back my
tears.
39. I have often had the feeling my head was heavy and
confused.
40. Sometimes I am afraid I will lose control of my
feelings.

DISSIPATION - RUMINATION

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by placing an appropriate number before each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below.

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

- 1. I never help those who do me wrong.
- 2. I will always remember the injustices I have suffered.
- 3. The more that time passes, the more satisfaction I get from revenge.
- 4. It is easy for me to establish good relationships with people.
- 5. It takes many years for me to get rid of a grudge.
- 6. When somebody offends me, sooner or later I retaliate.
- 7. I do not forgive easily once I am offended.
- 8. I often bite my fingernails.

9. I won't accept excuses for certain offenses.
10. I hold a grudge, for a very long time, towards people who have offended me.
11. I remain aloof towards people who annoy me, in spite of any excuses.
12. I can remember very well the last time I was insulted.
13. I am not upset by criticism.
14. I enjoy people who like jokes.
15. I still remember the offenses I have suffered, even after many years.
16. If somebody harms me, I am not at peace until I can retaliate.
17. When I am outraged, the more I think about it, the angrier I feel.
18. I like people who are free.
19. I am often sulky.
20. Sometimes I can't sleep because of a wrong done to me.

TOLERANCE TOWARD VIOLENCE

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by placing an appropriate number before each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below.

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. Because of its idealistic motivation, political violence is different from common violence and can be condoned more easily.
2. Holding a weapon gives a strong sense of confidence.
3. Women who suffer violence are always at least part responsible for it.
4. The unconditional rejection of all forms of violence may favor interests of privileged groups.

5. Since society is basically violent, it does not make sense to punish the single individual who resorts to violence.
6. Part of the loyalty towards one's own group is avenging offenses other members have suffered and protecting their lives.
7. Most people tend to trust others.
8. The violence which takes place among rival sports fans is nothing in comparison to the violence one faces every day without having any possibility of resisting.
9. There is no doubt that the way our society is organized fosters several forms of violence.
10. Anyone who is not able to defend own interests by resorting to force if necessary is very likely to become the victim of other's violence.
11. Violence in sports arenas and stadiums is mostly a matter of crowd psychology. It should be treated with more indulgence than other forms of violence.
12. Violence against property is sometimes a necessary form of protest.
13. Today there are many more reasons to resort to violence than in the past.
14. Few people are challenged by difficult situations.
15. A certain kind of violence, especially by men, is a necessary component of sexual interaction.

16. The only way many disadvantaged people have to change their condition is to turn to violence.
17. Most men have fantasies in which they commit violence against women.
18. Single individuals should only be held responsible in part for violence which has been done by a group.
19. Young people are violent in the streets and in sports stadiums ultimately because society has done nothing to educate them properly.
20. Young people are often just executors of violence on behalf of others, who should be held responsible.
21. Many people like practical jokes.
22. Violence in sports stadiums is given more importance than it deserves.
23. Given the increase in the number of muggings and robberies, one can understand why people carry weapons to defend themselves.
24. In poor areas robberies are the only means by which young people can make a living.
25. Sometimes the only way a man can turn a cold woman on is to use force.
26. Many times a woman will pretend she doesn't want to have intercourse because she doesn't want to seem loose, but she's really hoping the man will force her.

27. In the face of degeneration of political life many people may justly consider resorting to a form of violent protest.
28. To be part of a group implies reciprocating a kind of loyalty which goes beyond normal social rules.
29. Being roughed up is sexually stimulating to many women.

FEAR OF PUNISHMENT

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by placing an appropriate number before each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below.

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. It sometime happens that I feel my conscience is not completely clear.
2. I am afraid that someone may do me harm.
3. I am afraid lest I arouse envy in others.
4. It is satisfying to do a job well.
5. Some of my thoughts and wishes disturb me deeply.
6. I sometimes feel that other people are judging me.
7. I've felt a kind of need to be forgiven.
8. I enjoy speaking in front of groups of people.
9. I've had the sensation of being caught up in a vicious circle.

10. I have felt caged up.
11. I love sports.
12. The thought of being punished for my mistakes is a source of anguish for me.
13. I've reacted in ways that are hard to forgive.
14. I'm dissatisfied with the things I've done.
15. I'm sometimes weighted down by the feelings of guilt.
16. Its nice to let yourself go every so often.
17. Thinking over some of my actions causes me anguish.
18. It's worth telling lies in order to avoid the consequences of your actions.
19. Even years afterwards, I feel bad about my mistakes.
20. I watch television a lot.
21. I don't always feel equal to the situation.
22. My impression is that other people don't make many allowances for me.
23. I like comic-strips.
24. I haven't done as much as I might for other people.
25. I have experienced feelings of remorse.
26. I sometimes think with fear about the consequences of what I've done or said.
27. It's good to know how to live from day to day.
28. I'm afraid that people might get to know about some of the things I've done.
29. I feel that I have been insincere.

30. I've experienced a nagging conscience.

NEED FOR REPARATION

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by placing an appropriate number before each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below.

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. Its always best to admit what you've done, even if its really bad.
2. In general harm done to others is sure to rebound on the doer.
3. Thinking back on promises I've broken makes me really uncomfortable.
4. I sometimes talk about my childhood.
5. A person with serious faults is unlikely to sleep peacefully.

6. I feel that I have to make up for the wrongs that I've done to others.
7. People generally get what they deserve.
8. Setting aside time for yourself is a good habit.
9. After I lose my temper with someone, I don't get any peace until I manage to make things up with them.
10. I get uncomfortable when I feel rancour toward someone.
11. "The Lord helps those who help themselves".
12. You can't escape the consequences of your mistakes.
13. I get really embarrassed if I fail in my duties.
14. As you sow, so shall you reap.
15. I can remember what I dream.
16. Sooner or later the bad things that one has done come to light.
17. It makes me really sad to think of all the injustices in the world.
18. I read before I go to sleep.
19. Justice wins in the end.
20. When faced with my mistakes, I want to make up for them as soon as possible.

APPENDIX B

CAPRARA'S REVISED³ SCALES

IRRITABILITY

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by choosing an appropriate number for each item. Please do not leave out any item. *Remember there are no right or wrong answers.*

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. I easily fly off the handle with those who don't listen or understand.
2. I am often in a bad mood.
3. Usually when someone shows a lack of respect for me, I let it go by.
4. I have never been touchy.

³Changes are in *italics*.

5. It makes my blood boil to have somebody make fun of me.
6. I think I have a lot of patience.
7. When I am irritated I need to vent my feelings
immediately.
8. When I am tired I easily lose control.
9. I think I am rather touchy.
10. When I am irritated I can't tolerate discussions.
11. I could not put anyone in his place, even if it were
necessary.
12. I can't think of any good reason for resorting to
violence.
13. I often feel like a powder keg ready to explode.
14. I seldom strike back even if someone hits me first.
15. I can't help being a little rude to people I don't like.
16. Sometimes when I am angry I lose control over my
actions.
17. I do not know of anyone who would wish to harm me.
18. Sometimes I really want to pick a fight.
19. I do not like to make practical jokes.
20. When I am right, I am right.
21. I never get mad enough to throw things.
22. When someone raises his voice I raise mine higher.
23. Sometimes people bother me just by being around.
24. Some people irritate me if they just open their mouth.
25. Sometimes I shout, hit and kick and let off steam.

26. I don't think I am a very tolerant person.
27. Even when I am very irritated I never swear.
28. It is others who provoke my aggression.
29. Whoever insults me or my family is looking for trouble.
30. It takes very little for things to bug me.

EMOTIONAL-SUSCEPTABILITY

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by choosing an appropriate number for each item. Please do not leave out any item. *Remember there are no right or wrong answers.*

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

- 1. Fear of failure worries me more than necessary.
- 2. I like to be the center of attention.
- 3. I am too sensitive to criticism.
- 4. When I am afraid I completely lose control.
- 5. I often have the feeling others pity me.
- 6. I don't complain about what life has given me.
- 7. I often feel more tired in the morning than when I go to bed.
- 8. I am not afraid of loneliness.
- 9. More than once I have been moved to tears at the movies.

10. I easily get involved when someone tells me their troubles.
11. Sometimes I feel sad without any reason.
12. I have often felt lonely.
13. I often feel inadequate.
14. I am not scared of the dark.
15. Even in emergency situations I am able to control my reactions.
16. I often feel vulnerable and defenseless.
17. When I feel low I cry over nothing.
18. When I am waiting for someone I can't keep still, I pace up and down.
19. Sometimes I feel moved over nothing.
20. I have always felt challenged by difficult situations.
21. Strong emotions nearly paralyze me.
22. I can't hold back my tears when someone tells sad stories.
23. Sometimes I cry for no reason.
24. I often feel like I can't go on.
25. I often feel I am not up to situations.
26. I always try to meet new people.
27. I feel rather uneasy when someone stares at me.
28. I have often felt upset.
29. I like new things.
30. Sometimes I feel I am about to explode.

31. I often feel depressed.
32. Sometimes I feel on edge.
33. I very seldom lose my temper.
34. I feel down when others don't approve of me.
35. I often feel tense and nervous.
36. My voice trembles when I am very touched.
37. I tend to trust others.
38. When I am moved I find it difficult to hold back my
tears.
39. I have often had the feeling my head was heavy and
confused.
40. Sometimes I am afraid I will lose control of my
feelings.

DISSIPATION - RUMINATION

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by choosing an appropriate number for each item. Please do not leave out any item. *Remember there are no right or wrong answers.*

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. I never help those who do me wrong.
2. I will always remember the *wrongs* I have suffered.
3. The more that time passes, the more satisfaction I get from revenge.
4. It is easy for me to establish good relationships with people.
5. It takes many years for me to get rid of a grudge.
6. When somebody *insults* me, sooner or later I retaliate.
7. I do not forgive easily once I am *insulted*.
8. I often bite my fingernails.
9. I won't accept excuses for certain *insults*.

10. I hold a grudge, for a very long time, towards people who have *wronged* me.
11. I remain aloof towards people who annoy me, in spite of any excuses.
12. I can remember very well the last time I was insulted.
13. I am not upset by criticism.
14. I enjoy people who like jokes.
15. I still remember the *wrongs* I have suffered, even after many years.
16. If somebody harms me, I am not at peace until I can retaliate.
17. When I am outraged, the more I think about it, the angrier I feel.
18. I like people who are free.
19. I am often sulky.
20. Sometimes I can't sleep because of a wrong done to me.

TOLERANCE TOWARD VIOLENCE

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by choosing an appropriate number for each item. Please do not leave out any item. *Remember there are no right or wrong answers.*

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. Political violence is different from common violence and can be excused more easily.
2. Holding a weapon gives a strong sense of confidence.
3. Women are *always at least partly responsible for the violence they suffer.*
4. The *complete rejection* of violence may be in the best interests of privileged groups.
5. Since society is basically violent, it does not make sense to punish a violent person.

6. Part of the loyalty towards one's own group is avenging offenses other members have suffered and protecting their lives.
7. Most people tend to trust others.
8. Violence among *opposing* sports fans is nothing *compared* to the violence one faces every day *without any chance of striking back*.
9. There is no doubt that the way our society is organized fosters several forms of violence.
10. Anyone who is not able to defend own interests by resorting to force if necessary is very likely to become the victim of violence.
11. Violence in sports arenas and stadiums is mostly a matter of crowd psychology. It should be treated with more *understanding* than other forms of violence.
12. Violence against property is sometimes *part* of protests.
13. Today there are many more reasons to resort to violence than in the past.
14. Few people are challenged by difficult situations.
15. Violence *of some type* is a necessary *part* of sexual interaction.
16. The only way many disadvantaged people have to change their condition is to turn to violence.
17. Most men have fantasies *about* violence against women.

18. *An individual* should only be held responsible in part for violence *that* has been done by a group.
19. Young people are violent in the streets and in sports stadiums because *poor training by* society.
20. Young people are often just *do violence for others*, who should be held responsible.
21. Many people like practical jokes.
22. Violence in sports stadiums is given more importance than it deserves.
23. *With* the increase in muggings and robberies, one can understand why people carry weapons to defend themselves.
24. In poor areas robberies are the only means by which young people can make a living.
25. Sometimes the only way a man can turn a cold woman on is to use force.
26. Many times a woman will pretend she doesn't want to have intercourse because she doesn't want to seem loose, but she's really hoping the man will force her.
27. In the face of decay of political life many people may justly consider resorting to a form of violent protest.
28. To be part of a group implies a *give and take* kind of loyalty which goes beyond normal social rules.
29. Being roughed up is a *sexual turn on* for many women.

FEAR OF PUNISHMENT

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by choosing an appropriate number for each item. Please do not leave out any item. *Remember there are no right or wrong answers.*

- 1 = completely false for me
- 2 = fairly false for me
- 3 = false to a certain extent
- 4 = true to a certain extent
- 5 = fairly true for me
- 6 = completely true for me

1. It sometime happens that I feel my conscience is not completely clear.
2. I am afraid that someone may do me harm.
3. I am afraid lest I arouse envy in others.
4. It is satisfying to do a job well.
5. Some of my thoughts and wishes disturb me deeply.
6. I sometimes feel that other people are judging me.
7. I've felt a kind of need to be forgiven.
8. I enjoy speaking in front of groups of people.
9. I've had the sensation of being caught up in a vicious circle.

10. I have felt caged up.
11. I love sports.
12. The thought of being punished for my mistakes is a source of anguish for me.
13. I've reacted in ways that are hard to forgive.
14. I'm dissatisfied with the things I've done.
15. I'm sometimes weighted down by the feelings of guilt.
16. Its nice to let yourself go every so often.
17. Thinking over some of my actions causes me anguish.
18. It's worth telling lies in order to avoid the consequences of your actions.
19. Even years afterwards, I feel bad about my mistakes.
20. I watch television a lot.
21. I don't always feel equal to the situation.
22. My impression is that other people don't make many allowances for me.
23. I like comic-strips.
24. I haven't done as much as I might for other people.
25. I have experienced feelings of remorse.
26. I sometimes think with fear about the consequences of what I've done or said.
27. It's good to know how to live from day to day.
28. I'm afraid that people might get to know about some of the things I've done.
29. I feel that I have been insincere.

30. I've experienced a nagging conscience.

NEED FOR REPARATION

Instructions: Using the following scale, indicate the response which reflects your first reaction to each statement by choosing an appropriate number for each item.

Remember there are no right or wrong answers.

1 = completely false for me

2 = fairly false for me

3 = false to a certain extent

4 = true to a certain extent

5 = fairly true for me

6 = completely true for me

1. Its always best to admit what you've done, even if its really bad.
2. In general harm done to others is sure to rebound on the doer.
3. Thinking back on promises I've broken makes me really uncomfortable.
4. I sometimes talk about my childhood.
5. A person with serious faults is unlikely to sleep peacefully.
6. I feel that I have to make up for the wrongs that I've done to others.
7. People generally get what they deserve.

8. Setting aside time for yourself is a good habit.
9. After I lose my temper with someone, I don't get any
peace until I manage to make things up with them.
10. I get uncomfortable when I feel *spite* toward someone.
11. "The Lord helps those who help themselves".
12. You can't escape the consequences of your mistakes.
13. I get really embarrassed if I fail in my duties.
14. As you sow, so shall you reap.
15. I can remember what I dream.
16. Sooner or later the bad things that one has done come to
light.
17. It makes me really sad to think of all the injustices in
the world.
18. I read before I go to sleep.
19. Justice wins in the end.
20. When faced with my mistakes, I want to make up for them
as soon as possible.

APPENDIX C

RELIABILITY PROJECT FOR CAPRARA'S QUESTIONNAIRES

I, _____, have been asked to take part in a study to evaluate the reliability of a series of questionnaires that have not been used in forensic environment before. The study is being conducted by Jim Muirhead, under the supervision of Dr. Don Andrews from the Department of Psychology, Carleton University, as part of the requirements for his Ph. D.

Participation in this study involves ratings of statements on a 6-point scales. The testing session will take approximately 30 minutes. The information collected is solely for research and will be kept confidential. Publication of the data will not result in you being identified as a participant. Information obtained will not be put on any institutional file providing that you do not reveal anything that threatens the security of the institution.

I understand that participation in this study will not affect any administrative decisions concerning me such as my penitentiary placement or parole. My refusal to participate will also not affect my treatment by CSC in any way. I am

free to withdraw from the study at any time for any reasons without consequence or penalty to me.

I have read the above statement and freely consent to participate in this study.

(Signature of Subject)

(Signature of Witness)

Date: _____

APPENDIX D

VALIDATION PROJECT OF COMPUTERIZED TEST ADMINISTRATION

I, _____, have been asked to take part in a study to compare a number of different tests administered by a computer which is being conducted by Jim Muirhead, under the supervision of Dr. Don Andrews from the Department of Psychology, Carleton University, as part of the requirements for his Ph. D.

Participation in this study involves ratings of statements on 3-point to 6-point scales. The testing session will take between 40 and 60 minutes. You will have an opportunity for a break after each test (about every 40 items).

The information collected on the computer is solely for research and will be kept confidential. Publication of the data results will not result in you being identified as a participant. Information obtained from the computer will not be put on any institutional file providing that you do not reveal anything that threatens the security of the institution.

By signing below, I consent to the disclosure of information in my institutional files to Jim Muirhead.

I understand that participation in this study will not affect any administrative decisions concerning me such as my penitentiary placement or parole. My refusal to participate will also not affect my treatment by CSC in any way. I am free to withdraw from the study at any time for any reasons without consequence or penalty to me.

I have read the above statement and freely consent to participate in this study.

(Signature of Subject)

(Signature of Witness)

Date: _____

APPENDIX E

INFORMATION FORM

You have just answered a variety of questions dealing with attitudes and feeling towards aggression. Some of these tests have not been used with offenders before, whereas other have been used for sometime. I am interested in how the new tests compare with the old ones and if computer administration affects the outcome of the tests. This allows me to look at different tests and their ability to measure individual differences in aggression and violence.

I would like to thank-you for the time and effort that you have given to the study. I hope that the results will help us to understand offenders better and to improve ways of providing psychological service to them.

If you have any questions or comments about this study, you should call Dr. Don Andrews (613) 520-2600 ext. 2662 or Dr. Lisa Paquet (613) 520-2692, Chair of the Ethics Committee. If you still are not satisfied, you should call the Chair of the Psychology Department, Dr. Bill Jones (613) 520-2600 ext. 2644.

APPENDIX F

NOVACO ANGER SCALE (NAS)

PART A

The statements below describe things that people think, feel, and do. To what extent are they true for you? For each item indicate whether it is (1) never true, (2) sometimes true, or (3) always true. Choose the number (1, 2, or 3) that fits your response to the statement.

Never	Sometimes	Always
True	True	True
1 -----	2 -----	3

1. I notice annoying things right away.
2. Once something makes me angry, I keep thinking about it.
3. Every week I meet someone I dislike.
4. I know that people are talking about me behind my back.
5. Some people would say that I am a hothead.
6. When I get angry, I stay angry for hours.
7. My muscles feel tight and wound-up.
8. I walk around in a bad mood.
9. My temper is quick and hot.
10. When someone yells at me, I yell back at them.
11. I have had to be rough with people who bothered me.

12. I feel like smashing things.
13. When a person says something that offends me, I just
stop listening
14. I can't sleep when I have been done wrong.
15. If I don't like someone, it doesn't bother me to hurt
their feelings.
16. People can be trusted to do what they say.
17. When I get angry, I get really angry.
18. When I think about something that makes me angry, I get
even more angry.
19. I feel agitated and unable to relax.
20. I get annoyed when someone interrupts me.
21. If someone bothers me, I react first and think later.
22. If I don't like somebody, I'll tell them off.
23. When I get mad, I can easily hit someone.
24. When I get angry, I throw or slam things.
25. If a person does something nasty, it sticks out in my
mind.
26. When someone makes me angry, I think about getting even.
27. If someone cheats me, I'd make them feel sorry.
28. People act like they are being honest when they really
have something to hide.
29. When I get angry, I feel like smashing things

30. Some people get angry and get over it, but for me it takes a long time.
31. I have trouble sleeping or falling asleep
32. A lot of little things bug me.
33. I have a fiery temper that arises in an instant.
34. Some people need to be told to "get lost" .
35. If someone hits me first, I hit them back.
36. When I get angry at someone, I take it out on whomever is around.
37. Once I get angry, I have trouble concentrating.
38. I feel like I am getting a raw deal out of life.
39. When I don't like somebody, there's no point in being nice to them.
40. When someone does something nice for me, I wonder about the hidden reason.
41. It makes my blood boil to have someone make fun of me.
42. When I get mad at someone, I give them the silent treatment
43. My head aches when people annoy me.
44. It bothers me when someone does things the wrong way.
45. When I get angry, I fly off the handle before I know it.
46. When I start to argue with someone, I don't stop until they do.
47. Some people need to get knocked around.

48. If someone makes me angry, I'll tell other people about them.

PART B

The following items describe situations that can make someone angry. The scale on the right side is for the degree or amount of anger. For each of these situations below, please indicate the amount of anger that you would feel if it actually happened to you. Choose the number (1, 2, 3 or 4) that fits your response to the statement.

Not at all	A little	Fairly	Very
angry	angry	angry	angry
1-----	2-----	3-----	4-----

1. Being criticized in front of other people for something that you have done.
2. Seeing someone bully another person who is smaller or less powerful.
3. You are trying to concentrate, but someone keeps making noise.
4. People who act like they know it all.
5. Being slowed down by another person's mistakes.
6. You are in line to get something, and someone cuts in front of you.
7. Not being given recognition for doing good work.

8. You are watching a TV program, when someone comes along and switches the channel.
9. People who don't really listen when you talk to them.
10. Getting cold soup or cold vegetables for dinner.
11. Having someone look over your shoulder while you are working.
12. Being overcharged by someone for a repair.
13. You need to get somewhere in a hurry, but you get stuck in traffic.
14. People who think that they are better than you are.
15. You are carrying a cup of coffee, and someone bumps into you.
16. Someone making fun of the clothes you are wearing.
17. Being singled out for correction, when someone else doing the same thing is ignored.
18. You make arrangements to do something with a person who backs out at the last minute.
19. People who think that they are always right.
20. Just after waking-up in the morning, someone starts giving you a hard time.
21. Someone looks through your things without your permission.
22. Being accused of something that you didn't do.
23. You lend something to someone, and they fail to return it.

24. Someone who is always contradicting you.
25. It's mealtime and you are hungry, and someone plays a practical joke on you.

APPENDIX G

BUSS PERRY AGGRESSION QUESTIONNAIRE (BPAQ)

Instructions: Using the following scale, choose the number for each item to show how much it describes you. Please do not leave out any item.

1 = extremely uncharacteristic of me.

2 = somewhat uncharacteristic of me.

3 = neither uncharacteristic nor characteristic of me.

4 = somewhat characteristic of me.

5 = extremely characteristic of me.

1. Once in a while I can't control the urge to strike another person.
2. I tell my friends openly when I disagree with them.
3. I flare up quickly but get over it quickly.
4. I am sometimes eaten up with jealousy.
5. Given enough provocation, I may hit another person.
6. I often find myself disagreeing with people.
7. When frustrated, I let my irritation show.
8. At times I feel I have gotten a raw deal out of life.
9. If someone hits me, I hit back.
10. When people annoy me I may tell them what I think of them.

11. I sometimes feel like a powder keg ready to explode.
12. Other people always seem to get the breaks.
13. I get into fights a little more than the average person.
14. I can't help getting into arguments when people disagree
with me.
15. I am an even-tempered person.
16. I wonder why sometimes I feel so bitter about things.
17. If I have to resort to violence to protect my rights, I
will.
18. My friends say that I'm somewhat argumentative.
19. Some of my friends think I'm hotheaded.
20. I know that "friends" talk about me behind my back.
21. There are people who pushed me so far that we came to
blows.
22. Sometimes I fly off the handle for no good reason.
23. I am suspicious of overly friendly strangers
24. I can think of no good reason for ever hitting a person.
25. I have trouble controlling my temper.
26. I sometimes feel that people are laughing at me behind
my back.
27. I have threatened people I know.
28. When people are especially nice, I wonder what they
want.
29. I have become so mad that I have broken things.

IMAGE EVALUATION TEST TARGET (QA-3)

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