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An Analysis of the Cheater and Warrior-Hawk Hypotheses of the Origin of
Psychopathy

by

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A thesis submitted to the Department of Psychology
in conformity with the requirements for
the degree of Master of Arts

Queen's University

Kingston, Ontario

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Abstract

The present study evaluated the Cheater and Warrior-Hawk hypotheses of the origin of psychopathy. From the Cheater Hypothesis, it was predicted that psychopaths would display higher levels of indignation and lower levels of empathy and altruism than nonpsychopathic inmates. From the Warrior-Hawk Hypothesis, it was predicted that psychopaths would exhibit higher levels of aggressive behavior, higher behavioral activation, and lower behavioral inhibition than nonpsychopathic inmates. Both hypotheses received limited support, and a combined model was proposed. Thirty-seven psychopathic and 40 nonpsychopathic federal prison inmates were compared to test these hypotheses. Community ($N = 42$) and undergraduate ($N = 38$) samples served as comparison groups. The Cheater Hypothesis received limited support from the fact that psychopaths scored higher than their nonpsychopathic counterparts on the Vengeance Scale ($p < .05$). They also scored higher on cognitive than affective empathy ($p < .05$). Contrary to predictions derived from the Cheater Hypothesis, there was no difference in altruism scores between the two groups. Self Report Altruism Scale scores were, however, significantly negatively correlated with the Childhood and Adolescent Taxon Self Report scale scores ($p < .05$) and with scores on the Social Symptomatology subscale of the Holden Psychological Screening Inventory ($p < .05$). The Warrior-Hawk Hypothesis was also partially supported. Not only did psychopathic participants score higher than nonpsychopathic inmates on all measures of aggression ($p < .05$), they also scored higher on the Vengeance Scale, which incorporates a number of aggression

related items. Psychopaths had higher drive, according to the Behavioral Activation System subscale scores ($p < .05$) and were less inhibited, as evidenced by lower Behavioral Inhibition Scale scores than nonpsychopathic inmates ($p < .05$). A multiple regression found that Vengeance Scale scores best differentiated psychopathic from nonpsychopathic inmates. Psychopathic inmates were distinguished from all other groups only by scoring higher on the Childhood and Adolescence Taxon-Self Report Scale, whereas nonpsychopathic inmates were unique in scoring lower than all other groups on Social Symptomatology, Vengeance, and Funseeking.

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Summary of Research Goals and Objectives

It is common in the literature to view psychopathy as a disorder (Cleckley, 1941; Hare, 1993). However, theories based on the framework of evolutionary psychology allow for the possibility that psychopathy may have been adaptive in the environment of evolutionary adaptation (Frank, 1988; Mealey, 1995; Seto et al., 1997). The present study sought to evaluate the feasibility of two specific evolutionary hypotheses in explaining the origin of psychopathy. The Cheater Hypothesis suggests that psychopaths are cheaters in that they exploit the cooperation of others (Mealey, 1995). For this to be the case, cheaters would have to appear to be trustworthy. Frank (1988) suggested that cheaters would have elevated levels of indignation in order to mask the intention to cheat. Basically, cheaters show that they understand the concept of fairness by reacting to slights against their own person. The other social emotion described by Frank in this context was empathy. Cheaters should lack empathy, enabling them to cheat other people without feeling guilty. While the Cheater Hypothesis deals well with certain aspects of psychopathy, such as the apparent lack of empathy and remorse, it does not adequately address the impulsive aggression associated with psychopathy. The second specific evolutionary hypothesis dealt with in the present study is called the Warrior-Hawk Hypothesis. Dawkins (1976) described a strategy in the Hawk-Dove game, known as the "prober-retaliator". Individuals using this strategy will retaliate when they are attacked, and will escalate situations to see whether or not they can get away with it. If psychopaths are, in

fact, prober-retaliators, they should display more aggression, less inhibition, and higher drive, enabling the impulsive "probing" behavior.

Introduction and Literature Review

Cleckley (1941) was the first to describe psychopaths and to outline the features necessary for their diagnosis. He characterized psychopaths as irresponsible, impulsive, antisocial, unable to learn from experience, and lacking in long-term goals. Hare (1993) further outlined psychopathy as a personality disorder that is defined by "a distinctive cluster of behaviors and inferred personality traits" (p. ix). Based on the criteria outlined by Cleckley, Hare itemized the key symptoms of psychopathy in the Psychopathy Checklist-Revised (PCL-R; Hare, 1991). The PCL-R consists of 2 factors: Factor 1 deals mainly with emotional and interpersonal symptoms, and Factor 2 measures social deviance. Patrick (1994) termed these factors "emotional detachment" and "antisocial behavior", respectively.

In recent years there has been much research on psychopathy, undoubtedly due to the large amount of physical and emotional devastation that is attributable to psychopaths (Hare, 1993). For instance, 15 to 25 percent of the inmates in a typical prison population are diagnosed as psychopathic (Ogloff & Wong, 1990). In the general population, however, estimates of incidence range from two to four percent (Hare, 1993). It seems, then, that a large proportion of psychopathic individuals end up on the wrong side of the law. The crimes committed by these individuals seem to be fairly serious, as well. Ogloff and Wong reported that psychopathic inmates are responsible for three and a half times as many violent

offenses as their nonpsychopathic counterparts. Further, psychopaths are more likely to violate conditional release from prison (Hare, 1993).

Evolutionary Psychology and Psychopathy

Psychopathy is usually viewed as a disorder (reviewed in Mealey, 1995). However, it has been suggested that psychopathy, instead, could be described as a behavioral strategy that may have had adaptive value in the Environment of Evolutionary Adaptedness (Mealey, 1995; Seto, Khattar, Lalumière, & Quinsey, 1997). More specifically, psychopathy has been characterized as a frequency-dependent life history strategy (Frank, 1988). This means that the relative fitness of psychopathy as a strategy would depend on the relative frequency of other genotypes (i.e., nonpsychopaths) in the population. Heino, Metz, and Kaitala (1998) described frequency-dependent selection in detail and gave examples of ecological scenarios where frequency-dependent selection might occur, including predator/prey relationships, rare-type advantages in acquiring mates, and the use of mimicry. This type of frequency-dependent selection typically results in the evolution of stable polymorphisms (the existence of multiple genotypes).

Assuming that psychopaths and nonpsychopaths are an example of a stable polymorphism, psychopaths would have to be a discrete class, as found by Harris, Rice and Quinsey (1994) using taxometric analyses. According to Harris, Rice, and Quinsey, the distribution of scores on the PCL-R, indicates that psychopaths are, in fact, a discrete class. The low incidence of psychopathy in the general population (Hare, 1993) is consistent with this hypothesis. According to Colman and Wilson (1997), the prevalence of antisociality in general is

necessarily low when the relative gain from behaving antisocially toward a cooperator is much smaller than the relative loss to the cooperator. In the case of a stable polymorphism, heritability would have to be fairly high.

Heritability (Evidence for Genetic Influence)

Numerous studies offer evidence for the familial occurrence of criminality and psychopathy and/or Antisocial Personality Disorder (APD: Reid & Bottlinger, 1979). These studies have examined correlations between behaviors of parents and children, twin studies, and adoption studies (reviewed in Carey & Goldman, 1997). For example, criminality in parents was shown to predict similar behaviors in children (Brennan, Mednick et al., 1993). As well, Schulsinger (1972) found that 14% of the biological relatives of clinically diagnosed psychopaths were also psychopathic, compared with 5 to 8% in other groups (such as adoptive relatives).

Twin studies have also supported the idea that genes play a part in the occurrence of psychopathy (Zuckerman, 1991). In the Cambridge Study in Delinquent Development, it was found that identical twins were more concordant for criminal activity than fraternal twins (Farrington, 1998). Similarly, the Minnesota Study of Twins Reared Apart found that heritability was 41% for Conduct Disorder and 28% for Antisocial Personality Disorder. Essentially, a large percent of the variance in these disorders is attributable to genetic factors. Regardless of which genes are in fact responsible, it is clear that females are affected at a much higher threshold than are males. Interestingly, females displaying APD have been found to have a significantly higher number of affected relatives (Cloninger, Christiansen, Reich et al., 1978). In fact, there are 4

to 8 male relatives for every female proband (Cloninger, Reich, & Guze, 1975, 1978).

The Cheater Hypothesis

Mealey (1995) suggested that psychopaths are cheaters in the language of game theory and reciprocal altruism. This can best be illustrated with the "Prisoner's Dilemma" game (PD: Maynard-Smith, 1982). PD is a symmetric 2-person game in which individuals may choose to cooperate with one another, or defect. The payoff matrix is displayed in Appendix A. In a single interaction, the best strategy would be to defect, because it would maximize the reward. Realistically, though, individuals are often required to interact with another individual on numerous occasions. This is known as iterated PD, and the optimal strategy shifts from always defecting to "Tit For Tat", or some variant thereof (TFT: Maynard-Smith).

TFT is a strategy where an individual cooperates initially. If the partner defects, TFT will retaliate. TFT is forgiving, however, in that if the cheater makes amends by cooperating, TFT will go back to the "nicer" strategy. However, TFT is not an Evolutionarily Stable Strategy (ESS: Nowak & Sigmund, 1992). A population of TFT would leave the door open for cheaters who always defect (ALLD). It might go something like this: TFT cooperates and ALLD defects. TFT defects. ALLD defects. It goes on like this for the duration of the match. As may seem obvious, ALLD got more points in the first iteration, and so becomes the winner. In computer simulations, ALLD would overtake a population of TFT, but would eventually die out, because everyone would always be defecting.

Boyd and Lorberbaum (1987) suggested that no pure strategy would be evolutionarily stable. It is much more likely that individuals have differing propensities toward certain strategies, and combinations of strategies. It is important to remember that a strategy is a behavioral phenotype, and can be affected by the environment (Maynard-Smith, 1982). Along this line, Brown, Sanderson, and Michod (1982) stated that reciprocation is a conditional strategy. That is, the likelihood of reciprocation changes depending on the specifics of the situation. Important considerations would be the trustworthiness of the partner, the nature of the relationship, behavior in previous interactions, likelihood of interacting with the individual in the future, and cues to intentions in future interactions. The availability of resources is another important environmental contingency.

It has been hypothesized that psychopaths are cheaters in the sense that they exploit the cooperation of other individuals (Mealey, 1995). Seto et al. (1997) stated that psychopaths can be described as "defectors in social interactions". They found that psychopathy was related to deception, and that the relationship was not domain specific; psychopaths were deceptive in sexual and non-sexual contexts. Psychopathic individuals, then, could be seen as "short term interpersonal strategists".

It has been assumed that the proximal mechanism behind cheating is an emotional deficit and that this deficit prevents the development of empathy (Hare, 1993; Mealey, 1995). Many studies have found such a deficit in psychopaths (Hare, 1993; Patrick, Cuthbert, & Lang, 1994) and have concluded that

psychopaths suffer from a general poverty of emotion. Other researchers have been more liberal in their conclusions. For example, Plutchik, in a response to Mealey (1995), noted that while psychopaths seem to be lacking in emotions such as fear and sadness, it is not the case that all emotions are deficient. Psychopaths experience anger, rage, distrust and irritability at high intensities according to physiological, behavioral and self-report measures. Kosson and Newman (in response to Mealey, 1995) noted that even if psychopathy is characterized by a deficit in emotionality, there is not much evidence to show that the deficit is responsible for the interpersonal difficulties of the psychopath.

In order to view psychopathy as an adaptation, it is necessary to describe the context in which it would have evolved. Such a context must encompass the apparent deficits in emotionality, as well as the emotions that are experienced strongly by psychopaths. Wright (1995) in "the Moral Animal" discussed the evolution of reciprocal altruism in the context of inclusive fitness (Hamilton, 1964). According to the theory of inclusive fitness, an individual is increasingly likely to be altruistic towards kin, depending on how genetically related they are. Parents share 50% of their polymorphic genes with offspring, so it is more probable that the parent would behave altruistically toward his/her offspring than to an unrelated individual. According to Wright, evolution has "designed us to desire things and experience emotions that would enhance fitness".

Individuals are not "fitness maximizers", however, because they do not consciously decide to act in ways that increase fitness (Buss, 1996). Individuals are, instead, "adaptation executors". They act on instinct and emotions without

consciously thinking about fitness related issues. Emotions that would have been initially associated with aiding kin would have been selected for and individuals would experience these emotions and act on them. Wright stated that these emotions could then have been easily extended to unrelated individuals, resulting in a phenomenon called "reciprocal altruism" (Trivers, 1971). The give-and-take nature of reciprocal altruism, however, inherently leaves a niche open for cheaters. The situation arises where it is in the best interest of the cooperator to refuse interaction with a cheater. It would be in the cheater's best interest, then, to conceal the intention to cheat. If cheaters were readily identifiable, other individuals would refuse to interact with them. For cheating to be selected for, then, there must have been a way to conceal the intention to cheat.

Frank (1988) has given a specific explanation of how cheating may have evolved as an alternative strategy to cooperation. Frank described emotions as "commitment devices". By displaying certain emotions, individuals signal their intentions to others. This is why they are called commitment devices; feeling (and displaying) certain emotions commits an individual to act in certain ways. Frank described the continuous evolution of cheating tactics and detection methods as an "Evolutionary Arms Race". Cheaters who were easily detected and cooperators who were unable to detect cheaters would have been selected against, and rather quickly, at that.

Dugatkin (1992) suggested that cheaters who displayed the intention to cheat would be selected against, by virtue of the fact that they were easily identifiable. The only way for cheating to evolve would be through a continuous

selection process. Frank described this process in detail. Cheaters who could conceal the intention to cheat would be selected. Cooperators who were adept at reading the signs of cheating would then be selected. More skillful cheaters would then be selected, and so on. In the end, cooperators would have evolved to use reliable cues of trustworthiness and cheaters to conceal the intention to cheat, thus appearing to be cooperators. Trivers (1971) labeled this subtle cheating, and stated that selection would favor individuals who were able to mimic the traits of cooperators in order to influence their behavior.

Two possible mechanisms for the subtle cheater are sympathy and extreme moralistic aggression (revenge) (Trivers, 1971). Frank (1988) agrees that such cues to trustworthiness include the social emotions; indignation and empathy. Indignation is basically a reaction to having been treated unfairly. For example, if an individual is slighted in some way, he/she may react by attempting to get revenge. When an individual reacts to such a situation visibly, it signals to other people that he or she understands the concept of fairness and may be fair in future interactions with others.

Empathy is the second social emotion described by Frank (1988). It was defined as "an affective response more appropriate to someone else's situation than to one's own" (Blair, 1995). When an individual shows empathy towards another individual's situation, it signals to the people around him or her that fairness is a concern to this person. More importantly, it indicates that the individual is likely to be fair in future interactions. Frank (1988) provided a useful framework for the present study, because both of these social emotions may be an

important mechanism in the evolution of psychopathy as an alternative life history strategy.

Because humans are adaptation executors, not fitness maximizers, the feelings/emotions listed above could not be voluntarily turned on and off in a strategic manner (Wright, 1995). It is assumed that it is difficult for people to display an unfeigned emotion: emotional expression is to a considerable degree an honest signal. Evidence for this comes from the muted facial expressions that are achieved in posing versus spontaneous expressions (Landau, 1989). Psychopaths, therefore, may not be able to show empathy or indignation, unless those feelings were actually experienced.

Many researchers endorse the claim that empathy is lacking in psychopaths (Hare, 1993; Patrick, Cuthbert, & Lang, 1994). Marshall (1999) suggests, however, that empathy is a process involving several stages and that psychopaths have no difficulty understanding how others are feeling. He believes that the deficit appears in the final stage, deciding whether or not to assist someone. Psychopaths will tend to use the information of vulnerability for their own ends, rather than offer genuine assistance. It is possible that psychopaths compensate for the deficit in empathy by exhibiting strong displays of indignation. If there were no signal of trustworthiness, it would not be likely that psychopathy would be selected for. Other individuals would avoid interactions with psychopaths, and the story would end there. It is necessary, therefore, to examine possible signals of trustworthiness (such as indignation and empathy).

Warrior-Hawk Hypothesis

Although the Prisoner's Dilemma game adequately explains the manipulative skills and cheating nature of the psychopath, it does not fully address the violence and aggression typically associated with psychopathy (Colman & Wilson, 1997). The tendency toward moralistic aggression in cheaters (as discussed by Trivers, 1971) covers some of the aggression seen in psychopaths, but a second evolutionary theory that may explain the other aggressive behaviors in the psychopath is the Warrior-Hawk Hypothesis. This hypothesis is best described using the Hawk-Dove Game (Dawkins, 1976). In this game, the two basic strategies are "hawk" and "dove": Hawks will always fight very hard, while doves will threaten, but run if attacked. In this situation, hawks will always win, and neither strategy is evolutionarily stable.

Dawkins discussed an interesting strategy that may be more stable, known as the "Retaliator". Retaliators will start off like doves, but will retaliate if attacked. In other words, they are conditional strategists. This is remarkably consistent with evidence showing that psychopaths are extremely reactive to slights (Hare, 1993). This strategy does not, however, account for the impulsive aggression observed in psychopaths (Hare, 1993).

Another possible strategy is called the "Prober-Retaliator" (Dawkins, 1976). This is essentially the same as above, with a brief experimental escalation. This strategy is especially consistent with the behaviors of the psychopath. Psychopaths could easily be thought of as prober-retaliators, because they often display impulsive aggression in situations where most people would not consider it to be appropriate. Not only does it account for the psychopath's reactivity to

being slighted in some way, it also accounts for their use of intimidation.

According to Hare (1993), psychopaths use threats and intimidation to reach their own ends.

Proximal Mechanisms

One possible physiological proximal mechanism involved in psychopathy was first proposed by Fowles (1980). He applied Gray's theory of arousal to psychopathy. Gray's model includes the Behavioral Inhibition System (BIS) and the Behavioral Activation System (BAS) that were postulated to describe the learning process in terms of arousal. The BIS is related to anxiety and punishment. This is consistent with the fact that psychopaths show less behavioral inhibition (usually operationalized as a response to fear), in comparison to controls (Newman, Wallace, et al., 1997) and some punishments do not inhibit psychopaths (Newman, 1987). It has been shown, however, that psychopaths do not show this lack of behavioral inhibition when fines are used as punishments instead of aversive events like shocks (Schmuck, 1970).

It has been proposed that the BIS neurotransmitter is serotonin. The BAS is appetitive and reward-seeking, and dopamine appears to play a major role. Fowles suggests that psychopathy involves a weak BIS and overactive BAS resulting in the following symptoms: lack of anxiety, inability to inhibit behavior, inability to learn from past punishments, and lack of empathy and guilt. These symptoms are consistent with a diagnosis of psychopathy.

An imbalance between the two systems could, thus, be useful in explaining psychopathy. Perhaps the social emotion of empathy is associated with

the BIS (the inhibition of behavior). The BIS is associated with anxiety and fear, and inhibition of behavior. A lack of empathy, therefore, should be associated with a relatively weak BIS. Because the BAS is associated with aggression, and indignation often results in aggressive or threatening displays, it was predicted that higher levels of indignation would be related to a relatively strong BAS and the lack of empathy to a weak BIS. It has been shown previously that psychopathic individuals are more impulsive (Hare, 1993) and more aggressive (Patrick & Zempolich, 1998) than their nonpsychopathic counterparts.

In support of the BIS/BAS model as a proximal mechanism, there are a number of biological differences between psychopaths and nonpsychopaths. Total testosterone levels, for example, are positively associated with scores on the second factor (antisocial behavior) of the PCL-R (Stalenheim, Eriksson, Knorrning, & Wide, 1997). Two neurotransmitters have also been implicated in the occurrence of criminality. Abnormally low serotonin and high levels of dopamine have been found in habitually violent and impulsive offenders diagnosed with personality disorders (Virkkunen & Linnoila, 1993).

Researchers have found differences in physiological response to a variety of stimuli. Psychopaths exhibited significantly less differentiation in heart rate between fearful and neutral sentences than did their nonpsychopathic counterparts (Patrick, Cuthbert, & Lang, 1994) and, thus, it has been suggested that psychopaths have a selective deficit in emotional response (Newman, Schmitt, & Voss, 1997). Startle responses have also been measured by the number of eye blinks following neutral, pleasant, and unpleasant slides (Patrick, Bradley, &

Lang, 1993). It was found that psychopaths showed diminished blink responses during pleasant and unpleasant slides, as compared with neutral ones. As well, it has been demonstrated that psychopaths are less responsive to distress cues than control subjects (Blair, Jones et al., 1997).

Present Study and Objectives

The present study sought to evaluate the merits of the Cheater and Warrior-Hawk Hypotheses in explaining psychopathy. It was not assumed that the two hypotheses were mutually exclusive. Theoretically, it would be expected that psychopaths would display characteristics consistent with both hypotheses, and that the combination of cheating and intimidation behavior would have been adaptive. Some support for this idea was found by Quinsey, Book, and Lalumière (submitted) in a factor analytic study of nonoffender men. The Aggressiveness factor (reflecting the Warrior-Hawk Hypothesis) was correlated with the Antisociality factor (reflecting the Cheater Hypothesis). It was expected that psychopaths use both warrior-hawk and cheater strategies and that these strategies would correlate with each other in mixed groups of offenders but not within groups of psychopaths or non-psychopaths. This factor analysis also supports a theory put forth by Bugental (2000), namely, that social algorithms differ depending on domain. Three of her domains mirror those found in the factor analysis: 1) hierarchical dominance for aggression, 2) reciprocity for antisociality, and 3) mating. In the reciprocity domain, for example, interactions would require a long-term account of the costs and benefits afforded by each party. Cheater detection would also be an important issue. In contrast, the hierarchical power domain involves strategies, such as aggression and intimidation, that might be important in securing a higher position in a dominance hierarchy.

Cheater Hypothesis

Three predictions stem from the Cheater Hypothesis of the origin of psychopathy. First, psychopathic offenders will have higher scores on measures of vengeance/indignation than nonpsychopaths. Frank (1988) suggested that cheaters would have elevated levels of indignation in order to mask the intention to cheat the other individual. As mentioned previously, vengeance is also related to the Warrior-Hawk Hypothesis, insofar as vengeance is aggressive.

The second prediction involves the apparent lack of empathy characterizing psychopaths. Although psychopaths should exhibit lower levels of empathy than nonpsychopaths, this difference should not include a difference in cognitive empathy, because of the usefulness of this capacity in pursuing a cheating strategy. It was predicted, therefore, that psychopaths will show higher levels of cognitive than affective empathy.

A final prediction based on the Cheater Hypothesis of psychopathy was that psychopaths would report being less altruistic than their nonpsychopathic counterparts.

Warrior-Hawk Hypothesis

The Warrior-Hawk Hypothesis does not contradict the predictions made based on the Cheater Hypothesis, but it does seem to better account for the aggressive nature of psychopaths. For example, it would be expected that psychopaths will exhibit higher levels of aggression, if, in fact, psychopaths are analogous to the Prober-Retaliator in the Hawk-Dove game (Dawkins, 1976). They should also display less inhibition and higher drive. This would enable impulsive “probing”, or escalating behavior.

General Predictions

It was expected that the psychopaths would use strategies different from those used by nonpsychopaths. If, in fact, the groups do differ in terms of strategy, the variance in each measure should be lower in the pure groups than in the mixed group. This would produce strong correlations among measures in the mixed group and lower correlations in the pure groups. To test this, correlation matrices of the variables involved in the predictions above were examined.

Method

Participants

Design

A specificity design (Garber & Hollon, 1991), involving non-institutional comparison groups, was used to determine whether differences between psychopathic and nonpsychopathic inmates could be interpreted as meaning the variable concerned was associated with something unique about psychopathic, as opposed to non-psychopathic, inmates. In the present study, 3 groups were initially sought; psychopathic inmates, nonpsychopathic inmates, and a community sample. When early data analyses showed similarities between community members and the both groups of institutional participants, another comparison group was sought, namely undergraduate students.

Seventy-seven men who were serving federal sentences of 2 years or more were recruited from prison populations in the Kingston area. The researcher attempted to get equal numbers of psychopathic and nonpsychopathic inmates. The end result was 40 nonpsychopathic inmates and 37 psychopaths. Group membership was determined using pre-existing scores from the Psychopathy Checklist Revised (PCL-R). Cut-off scores on the PCL-R used in research have varied considerably, but taxometric analyses have shown that offenders who score 25 or more are highly likely to be psychopaths and offenders who score 20 or less are likely to be members of the complementary class (Harris, Rice, & Quinsey, 1994). These cutoffs were used to distinguish between psychopathic and nonpsychopathic offenders.

The mean age of the nonpsychopathic inmates was 35.28 years ($SD = 9.95$), while psychopaths had a mean age of 33.43 years ($SD = 9.25$). Of the 77 offenders, 57 were Caucasian (74.03%), 11 were Black (14.3%), 6 were Aboriginal (7.8%), and 3 were Asian (3.9%). The proportion of psychopaths and nonpsychopathic inmates represented in each racial group was approximately equal. Of the 77 institutional participants, 19 were recruited from minimum-security institutions (24.7%), 30 from medium-security institutions (38.9%), and 28 from maximum-security institutions (36.4%). As expected, psychopaths were more likely to be recruited from a maximum-security institution, $\chi^2(2, N = 77) = 28.19, p < .001$. Table 1 gives the numbers of psychopathic and nonpsychopathic offenders recruited from each security level.

Table 1

Participant Type by Security Level

	Minimum	Medium	Maximum	Total
Nonpsychopath	17	19	4	40
Psychopath	2	11	24	37
Total	19	30	28	77

File information was gathered for each participant including criminal history, PCL-R score, institutional treatments and risk level. Table 2 is a summary of the means and standard deviations for each group on the continuous variables coded from institutional files.

Many of the variables listed in Table 2 were found to violate the assumption of normality. This was not surprising, given that many participants had committed multiple crimes, creating a positively skewed and leptokurtic distribution. The assumption of equal variances was violated for aggregate sentence ($p < .001$), number of juvenile incarcerations ($p < .001$), and the number of violent juvenile convictions ($p < .001$). For these variables, equal variances were not assumed (adjusting for degrees of freedom). Variables not discussed in this section did not show significant differences between the groups. Psychopathic offenders tended to have a shorter aggregate sentence than nonpsychopathic inmates. As well, psychopaths tended to have more juvenile incarcerations and violent juvenile convictions than nonpsychopathic inmates.

Table 2

File Information by Group

Variable	Group	N	Mean	SD	zskew	zkurt
Aggregate Sentence*	Psychopathic	37	16.84	22.12	4.98	2.99
	Nonpsychopathic	40	30.55	30.75	1.29	-2.42
Age at start of sentence	Psychopathic	37	27.51	8.65	3.64	2.27
	Nonpsychopathic	40	29.20	9.59	2.97	1.31
Number of crimes	Psychopathic	36	15.39	12.82	3.56	2.02
	Nonpsychopathic	40	12.89	15.11	4.26	2.68
Number of incarcerations	Psychopathic	36	2.67	1.59	1.73	-0.86
	Nonpsychopathic	40	2.30	2.92	9.58	22.46
Juvenile incarcerations*	Psychopathic	25	20.68	31.46	2.22	-1.12
	Nonpsychopathic	34	4.65	16.67	5.48	17.61
Juvenile convictions	Psychopathic	26	21.73	28.13	2.40	-0.63
	Nonpsychopathic	34	10.18	23.03	11.04	4.29
Juvenile violent convictions*	Psychopathic	26	17.19	29.57	2.94	-0.22
	Nonpsychopathic	33	0.15	0.36	10.88	26.71

Note: * indicates significance at the .05 level, values in brackets are standard deviations. Number of crimes is the total number of crimes as an adult offender. Number of violent crimes refers to crimes in which the individual harms, or threatens to harm, another person. Juvenile crimes are similarly defined, with crimes occurring before the age of majority (18 years of age). Also note that z values over 3.00 indicate violations of normality.

Data were also collected on a number of categorical variables. Of the 77 offenders, only 2 were labeled as being Dangerous Offenders; both were psychopaths, but no significant relationship emerged, $\chi^2 (1, N = 77) = 2.22, NS$. Ten offenders denied the crime for which they were serving time (3 nonpsychopathic inmates and 7 psychopaths). Again, there was no significant relationship ($\chi^2 (1, N = 77) = 2.22, NS$). Whether an inmate had participated in some form of treatment was not related to group membership, $\chi^2 (1, N = 77) = 3.66, NS$, but treatment type was, $\chi^2 (5, N = 77) = 11.63, p < .05$. However, expected values for some cells were less than 5, violating an assumption necessary for the interpretation of results. Nonpsychopathic inmates were much more likely to participate in multiple treatment programs. Table 3 outlines the frequencies of psychopaths and nonpsychopathic inmates in each treatment modality.

Table 3

Type of Treatment by Group

	Nonpsychopathic inmates	Psychopaths
Cognitive Skills	6	3
Anger Management	3	3
Substance Abuse	2	1
Sex Offender Treatment	0	5
Other	1	2
Multiple Programs	17	5
Total	29	19

Type of Crime

Means and standard deviations for each type of crime are listed in Table 4.

Values represent the entire criminal history, not simply the current sentence.

Types have been sorted into 3 categories: Nonviolent Crimes (including theft, break and enter, arson, robbery (not armed), fraud, and release violations), Violent Crimes (including assault, murder, armed robbery, kidnapping, etc.), and Sexual Crimes (against children or adults).

All of the variables were positively skewed and leptokurtic, because not many individuals committed a large number of crimes in each category. Levene's test was significant for number of violent crimes ($p < .05$) and number of sex crimes ($p < .001$), indicating violation of the assumption of homogeneity of variance. For those variables that met neither assumption, the test was performed adjusting for heterogeneity by changing the degrees of freedom.

Table 4

Means for each category by group

Category	Group	N	Mean	SD	zskew	zkurt
Nonviolent Crimes	Psychopath	37	10.78	11.88	5.30	5.14
	Nonpsychopath	40	10.10	13.02	3.80	2.37
Violent Crimes*	Psychopath	37	4.46	4.41	3.92	3.82
	Nonpsychopath	40	2.73	2.75	4.28	3.47
Sex Crimes	Psychopath	37	0.43	1.28	10.88	26.38
	Nonpsychopath	40	0.03	0.16	16.91	54.57

Note: * indicates significance at the .05 level.

Psychopaths were convicted of a significantly larger number of assaults, assaults with a weapon, attempted murders, sexual assaults, and kidnappings/forced confinements than were nonpsychopathic offenders.

Community Sample

Forty-two male participants were recruited from the Kingston community by advertising in a local newspaper. The advertisement stipulated the need for adult male participants and ten dollars was offered in return for participation. The mean age of the community participants was 33.35 ($SD = 11.87$). Of the 42 men in this sample, 38 were Caucasian, 1 was Black, and 3 were Aboriginal.

Undergraduate Sample

A second comparison group was sought, due to the fact that the community sample scored as highly as the nonpsychopathic inmates on measures of antisociality, such as the Childhood and Adolescent Taxon-SR (see results section). Previous research has also shown that groups recruited from the Kingston community in this manner had similar criminal histories to inmate populations (Belmore & Quinsey, 1994). Undergraduate participants were sought as a less antisocial comparison group. Thirty-eight undergraduates were recruited through the Introductory Psychology Subject Pool at Queen's University. In exchange for participation, students received academic credit. The mean age in this sample was 19.16 years ($SD = 0.72$). Of the 38 men in this sample, 33 were Caucasian, 1 was Black, 3 were Asian, and 1 was from the Middle East. The consent form for community and undergraduate participants is attached as Appendix F.

The four samples differed significantly in age. $F(1, 154) = 25.79, p < .001$. Tukey's HSD found that the undergraduate sample were significantly younger than the other 3 groups, while the other 3 groups were not significantly different from one another.

Power Analysis

An a-priori power analysis was conducted using GPOWER (1992). For a power of .8, it is necessary to have at least 103 participants if a medium effect size is expected in the case of a multiple regression analysis with 7 predictors (Figure 1). The number of participants, overall, reached 158.

Materials

Demographics

All respondents were asked to provide information on age and race. This was requested on the first page of the questionnaire package in Appendix B.

Measures of Psychopathy/Antisociality

Psychopathy Checklist- Revised scores (PCL-R; Appendix B; Hare, 1991) were retrieved from institutional files to determine group membership for the institutional participants. The self-report version of the Child and Adolescent Taxon indicator (Harris, Rice, & Quinsey, 1994) was also administered in order to make appropriate comparisons between prison and community populations. Scores range from 0 to 16, and are significantly correlated with the interview measure of the same items ($r = .87$; Seto et al., 1997). As well, Lalumière et al. (1996) found a negative correlation between Childhood and Adolescent Taxon Self Report scores and Gough's measure of socialization ($r = -.49$). It was also

found that scores correlate negatively with Paulhus's Impression Management subscale ($r = -.22$). Lalumière and Quinsey (1996) obtained significant correlations with Levenson's psychopathy scale, sensation seeking, different measures of mating effort, and self-reported sexual aggression.

The third scale that was used to measure antisocial tendencies was the Social Symptomatology subscale of the Holden Psychological Screening Inventory (Holden & Grigoriadis, 1995). Internal consistencies for the subscales range from .79 to .87. The construct validity of the scale has been demonstrated by correlations with interpersonal problems, impulse expression, and the Psychopathic Deviate Scale from the Minnesota Multi Phasic Personality Inventory –2.

Altruism

The Self-Report Altruism Scale was administered. Reliabilities range from .78 to .87 (Rushton, Chrisjohn, & Fekken, 1981) and the scale total correlates with peer ratings of altruism ($r=.51$).

Empathy

The measure of empathy that was used is known as the Interpersonal Reactivity Index, developed by Davis (1983). It has a total of 28 items that are split equally into 4 subscales. They are known as "Perspective Taking", "Fantasy", "Empathic Concern" and "Personal Distress". The first two are cognitive measures of empathy, while the last two deal with emotional or affective empathy. Measures of internal consistency range from .76 to .82. Total scores for the cognitive and affective dimensions were calculated.

The Irresponsibility and Insensitivity Scale was used as a supplementary variable to the Interpersonal Reactivity Index (Conroy, Zamble, & Brown, unpublished). The scale has items relating to the effect an individual's actions have on other people. An example is "Anyone I have hurt by my crimes deserved what they got". Internal consistency was found to be satisfactory ($\alpha = .80$). This scale was only administered to the institutional participants because most of the content concerns offenders' crimes and victims.

Indignation

The Vengeance Scale, developed by Stuckless and Goranson (1992) was employed as a measure of the indignation construct. As was discussed earlier, it was predicted that psychopaths would use indignation as a cue of the intention to act fairly in interactions with others. One example of an indignant reaction is vengeance seeking. When an individual is slighted, vengeance may cross their mind. Revenge is defined as the infliction of harm in return for a perceived wrong. It has been demonstrated that inmates tend to score more highly than non-inmates on the Vengeance Scale. Internal consistency has been shown to be high ($\alpha = .92$). This scale was expected to correlate highly with aggressiveness.

Another concept that falls under the indignation construct is that of entitlement. It is possible that the psychopath has an exaggerated sense of entitlement, resulting in the use of indignation at smaller slights. The Exaggerated Deservingness Scale was, therefore, relevant in terms of the indignation construct (Kelln, 1997). An example item is "I feel as though I ought to be the first person in line". Internal consistency estimates range from .82 to .87.

Aggression and Inhibition

The BIS/BAS scale was developed by Carver and White (1994) to measure the 2 motivational systems posited to underlie behavior. The behavioral activation system (BAS) is believed to regulate appetitive motives, in which the goal is to move toward something that is desired. The behavioral inhibition system (BIS) is thought to regulate aversive motives, in which the goal is to move away from something unpleasant. The scale purports to measure individual differences in the sensitivity of these systems. It contains 4 subscales; BIS, BAS Drive, BAS Fun seeking, and BAS Reward Responsiveness. The internal consistency of the above scales ranges from 0.66 to 0.74.

The last scale included in the present study was the Aggression Questionnaire (Buss & Perry, 1992). Subscales include Physical Aggression, Verbal Aggression, Anger, and Hostility. Alpha coefficients range from .72 to .85 (Carver & White, 1994).

Social Desirability and Faking

The Balanced Inventory of Desirable Responding (Paulhus, 1998) was chosen because one of its subscales measures "Impression Management". The other subscale is called "Self-Deception". Alpha coefficients range from .58 to .84 (Kroner & Weekes, 1996). Results of a validation study seem to suggest that the inventory has "utility in the measurement of socially desirable responding with offenders" (p. 323). A second questionnaire was used to measure social desirability. The Holden Psychological Screening Inventory also measures

socially desirable responding. Lower total HPSI scores indicate socially desirable responding (Holden & Grigoriadis, 1995).

Institutional File Information

For institutional participants, permission was sought for a file review by the principal researcher. First, the PCL-R score was recorded for group assignment. After participation, information on past and present convictions, types of crimes, and treatment were coded from the individual's file (see Appendix C).

Procedure

Inmates

The data collection procedure for the incarcerated men varied slightly depending on the institution involved. Psychology department staff at each institution aided in finding the most effective method of recruitment. In the first step of data collection, files were perused to determine which inmates met the criteria for the present study. All men meeting the PCL-R criteria (25 or higher for the Psychopathic group, 20 or lower for the Nonpsychopathic group) were called down to the psychology department. Participation rates were fairly similar at all institutions. Overall, 67 % of those who were approached agreed to participate (77/115).

When an offender arrived at the psychology department, he was informed about the purpose of the study, and was asked to read through the consent form (Appendix D). The consent form clearly stated that PCL-R scores would be utilized for group assignment. All potential institutional participants were assured

that any information provided would not be made available to the Correctional Service of Canada. As well, it was noted that there would be no adverse consequences for the decision to take part, or not, in the study. Offenders read the consent form and signed it in the presence of the researcher. The opportunity to ask questions was given at this point.

Most of the men who agreed to participate completed the questionnaire package alone or in groups (up to 6 individuals per session) in the presence of the researcher. This gave participants the opportunity to ask questions and clarify information sought by items on the questionnaires. Four participants at Kingston Penitentiary were unable to fill in the questionnaires at the psychology department (due to work and/or health issues) and were allowed to take the questionnaire packages back to their units to complete on their own time. All four were returned to the psychology department within 3 days. Once participants completed the questionnaire package, they were given a debriefing form (Appendix E) explaining the general purpose of the study in more detail, and giving contact numbers in case the participant had questions or concerns about the study. At this point, participants were thanked for their participation.

The researcher then performed a file review on all individuals who had completed the questionnaire package. The Institutional Coding Form (Appendix C) was filled in detailing criminal history, sentence length, juvenile history, antisocial behaviors, and institutional treatment history.

Community Participants

A comparison group of men from the Kingston community was recruited through an advertisement in the Kingston Whig Standard in June 1999 and January 2000. The second advertisement was necessary to approximately match the number of psychopaths and nonpsychopathic inmates. The advertisement stated that men would be paid \$10 to take part in a study investigating personality and emotions. The researcher's laboratory phone number was provided. When potential participants contacted the researcher, a date and time was set up to meet in the psychology department at Queen's University. On arrival, participants were met by the researcher and asked to read the consent form (Appendix F). They were given the opportunity to ask questions before the study commenced. None of the participants withdrew from the study. Participants filled out the same questionnaire package as the institutional participants, except for the Irresponsibility and Insensitivity Scale. This scale was excluded because over 50% of the questions were related to the participant's "crime" and "victim". Participants filled out the package in groups (2 to 12 people per session). The researcher was available should any questions have arisen, and to ensure that participants did not discuss their responses with one another. Most participants spent half an hour to fifty minutes filling out the questionnaires. On completion, the men were given a debriefing form (Appendix G) outlining the purpose of the study and providing contact numbers in case of questions or concerns. Participants were paid \$10 at that time and thanked for their participation.

Undergraduate Participants

The undergraduates were recruited through the Introductory Psychology subject pool at Queen's University. Once the participants arrived, the procedure matched that of the community sample. Instead of receiving \$10 for participation, men in this sample were given extra credit in Psychology 100.

Data Analysis

All analyses were completed using SPSS 8.0 and 10.0 for Windows. First, all groups were compared on all variables using analysis of variance, followed by Tukey's Honestly Significant Difference (HSD). As well, to test specific predictions, psychopathic and nonpsychopathic inmates were compared on a number of variables using t-tests. Following these preliminary analyses, a logistic regression was conducted to determine the degree to which psychopaths could be discriminated from nonpsychopathic inmates based on scores on the test variables. A discriminant function analysis would normally be used in this case, but a number of the test variables were in violation of the assumptions of normality and homogeneity. Logistic regression, however, also attempts to discriminate between groups while relaxing the assumptions of homogeneity and normality for the test variables. Both discriminant function analysis and logistic regression follow a multiple regression model, using a dichotomous variable as the dependent variable. In this case, group membership was psychopathic versus nonpsychopathic, as determined by PCL-R scores.

Assumptions

Normality of variables (skewness and kurtosis)

In the undergraduate group, Childhood and Adolescent Taxon-Self Report, Impression Management, funseeking, and BIS/BAS scores were positively skewed. As well, funseeking and BIS/BAS scores were leptokurtic. In the community group, only Impression Management scores were positively skewed. Vengeance scores in nonpsychopathic inmates were also positively skewed. The psychopathic group exhibited more non-normal data than the other groups. Social Symptomatology scores were positively skewed, and Perspective Taking and total empathy scores were negatively skewed. As well, both Social Symptomatology and total empathy had leptokurtic distributions. Statistics for skewness and kurtosis are listed in Table 9.

Homogeneity of variance

The assumption of homogeneity of variance was tested using the Levene's statistic. Table 5 lists the significance levels associated with this test for each variable. Total score on the Childhood and Adolescent Taxon-SR, the Holden Psychological Screening Inventory total, Self Deception, Psychiatric Symptomatology, Social Symptomatology, total Self Report Altruism, and total Vengeance Scale scores did not meet the assumption of homogeneity of variance.

Table 5

Tests of Assumptions for all Dependent Variables

<u>Variable</u>	<u>Group</u>	<u>rskew</u>	<u>rskurt</u>	<u>Levene</u>	<u>Alpha</u>
<u>Antisociality</u>					
Social Symptomatology	Nonpsychopath	2.61	1.09	.01	.80
	Psychopath	3.48	5.41		
	Community	2.30	0.51		

	Undergraduate	1.36	-0.22		
Irresponsibility and Insensitivity Scale	Nonpsychopath	-2.83	0.84	.14	.75
	Psychopath	-1.98	0.68		
	Community	NA	NA		
	Undergraduate	NA	NA		
Childhood and Adolescent Taxon- SR	Nonpsychopath	0.56	-1.23	.01	.81
	Psychopath	-1.61	-0.16		
	Community	-0.11	-1.90		
	Undergraduate	3.41	1.99		
<u>Socially Desirable Responding</u>					
Self Deception	Nonpsychopath	0.51	-1.47	.03	.70
	Psychopath	-0.04	-0.66		
	Community	0.30	0.87		
	Undergraduate	1.83	0.95		
Impression Management	Nonpsychopath	1.85	0.32	.53	.78
	Psychopath	1.74	-0.60		
	Community	3.60	2.89		
	Undergraduate	3.19	2.26		
Holden Psychological Screening Inventory	Nonpsychopath	0.25	-1.05	.01	.70
	Psychopath	-0.05	-0.36		
	Community	-0.71	-1.04		
	Undergraduate	-0.94	0.73		
Balanced Inventory of Desirable Responding	Nonpsychopath	0.52	-1.04	.09	.83
	Psychopath	0.93	-0.08		
	Community	2.30	0.48		

	Undergraduate	1.94	0.39		
<u>Indignation/Vengeance</u>					
Exaggerated Deservingness	Nonpsychopath	-0.72	0.53	.28	.87
	Psychopath	-0.28	0.31		
	Community	-0.59	-0.14		
	Undergraduate	-0.35	0.08		
Vengeance Scale	Nonpsychopath	3.14	2.24	.02	.96
	Psychopath	1.18	-0.36		
	Community	1.84	0.62		
	Undergraduate	0.28	-0.93		
<u>Behavioral Inhibition/Activation</u>					
BASfun	Nonpsychopath	-0.94	-1.46	.25	.75
	Psychopath	-2.93	2.64		
	Community	-1.43	-0.23		
	Undergraduate	-2.87	4.68		
BASrew	Nonpsychopath	-1.41	0.41	.49	.69
	Psychopath	-0.68	-0.61		
	Community	-2.13	0.31		
	Undergraduate	-1.40	-0.10		
BASdrive	Nonpsychopath	0.25	-0.50	.51	.74
	Psychopath	0.39	-0.19		
	Community	1.02	-0.10		
	Undergraduate	-0.94	0.46		
BIS	Nonpsychopath	0.01	0.47	.08	.64
	Psychopath	0.16	-0.94		

	Community	0.69	-1.45		
	Undergraduate	0.19	-0.46		
BAS	Nonpsychopath	-0.28	-0.71	.46	.85
	Psychopath	-1.19	0.19		
	Community	-1.53	0.41		
	Undergraduate	-1.85	1.90		
BIS/BAS	Nonpsychopath	-0.07	-0.42	.72	N/A
	Psychopath	2.15	1.91		
	Community	2.16	2.18		
	Undergraduate	4.80	8.93		
<u>Aggression</u>					
Verbal Aggression	Nonpsychopath	0.16	-0.91	.21	.58
	Psychopath	0.89	0.11		
	Community	0.64	-0.13		
	Undergraduate	0.03	-0.61		
Physical Aggression	Nonpsychopath	-0.21	0.84	.87	.81
	Psychopath	-0.56	0.07		
	Community	0.07	0.84		
	Undergraduate	-0.53	0.08		
Anger	Nonpsychopath	-1.16	-0.03	.67	.65
	Psychopath	-0.43	-0.09		
	Community	-0.15	-0.73		
	Undergraduate	-0.66	-1.13		
Hostility	Nonpsychopath	-0.27	-1.12	.12	.76
	Psychopath	0.46	1.32		

	Community	-0.20	-1.16		
	Undergraduate	0.11	-1.12		
Aggression Questionnaire total	Nonpsychopath	0.62	-0.32	.06	.85
	Psychopath	1.22	0.61		
	Community	0.11	-1.36		
	Undergraduate	-1.18	-0.81		
<u>Empathy/Altruism</u>					
Self Report Altruism Scale	Nonpsychopath	1.70	1.38	.03	.94
	Psychopath	1.31	-0.66		
	Community	2.40	2.07		
	Undergraduate	0.87	-0.86		
Empathic Concern	Nonpsychopath	-2.43	1.30	.39	.82
	Psychopath	-2.34	2.71		
	Community	-0.60	0.83		
	Undergraduate	-1.26	1.34		
Fantasy	Nonpsychopath	-0.58	-0.06	.23	.60
	Psychopath	-0.50	0.97		
	Community	0.69	0.90		
	Undergraduate	-0.65	-0.31		
Distress	Nonpsychopath	-1.05	-0.75	.62	.76
	Psychopath	0.01	-1.02		
	Community	0.10	-0.83		
	Undergraduate	-0.84	-0.91		
Perspective Taking	Nonpsychopath	-0.78	-0.11	.79	.85
	Psychopath	-3.48	4.58		

	Community	-1.09	0.71		
	Undergraduate	-1.13	0.92		
Empathy total	Nonpsychopath	-0.37	0.06	.25	.77
	Psychopath	-5.01	7.90		
	Community	-1.11	-0.83		
	Undergraduate	-0.09	-0.52		
<u>Other Measures</u>					
Depression	Nonpsychopath	0.50	-1.08	.19	.82
	Psychopath	-0.25	0.39		
	Community	-0.25	-1.05		
	Undergraduate	0.24	0.20		
Psychiatric Symptomatology	Nonpsychopath	2.59	2.02	.02	.76
	Psychopath	0.26	0.86		
	Community	1.04	-0.44		
	Undergraduate	0.86	-0.26		
<u>Transformed Variables</u>					
Childhood and Adolescent Taxon-SR ²	Nonpsychopath	-2.23	0.02	<.01	NA
	Psychopath	-2.95	2.15		
	Community	-1.85	-0.07		
	Undergraduate	0.13	-0.96		
Social Symptomatology ²	Nonpsychopath	1.20	-0.05	.03	NA
	Psychopath	1.14	1.78		
	Community	0.73	-0.39		
	Undergraduate	0.38	-0.34		
Vengeance Scale ²	Nonpsychopath	1.59	0.70	.04	NA

Psychopath	0.17	-0.93
Community	0.50	-0.26
Undergraduate	-0.41	-0.83

Note: variables with the superscript ^a have been transformed using a square root transformation.

In instances where a variable only violated one assumption, the ANOVA was assumed to be robust to violations. Where both assumptions were violated, variables were transformed. Variables that did not meet either assumption included the total Childhood and Adolescent Taxon-SR score, Social Symptomatology, and the Vengeance Scale. A square root transformation was used, because the data were positively skewed in these cases.

The transformed variables met the assumption of normality, but still did not meet the assumption of homogeneity (see Table 6 for the z values and significance levels for the Levene's test – new variables are designated by adding the word "new" to the original variable). The ANOVAs were assumed to be robust to violations of homogeneity in these cases.

Results

Descriptive Statistics

Internal Consistency of Measures

Table 5 contains Cronbach's Alphas for each variable. All variables were above .60 with the exception of the the Verbal Aggression subscale ($\alpha = .58$). The dependent variables, in general, displayed sufficient internal consistency.

Empathy/Altruism Intercorrelations

Correlations among the Interpersonal Reactivity Index subscales and Self Report Altruism scores are shown in Table 6. As expected, considering 4 of the 5 variables are from the same scale, most of the correlations were significant.

Table 6

Interpersonal Reactivity Index Subscale Intercorrelations

		Empathic Concern	Fantasy	Distress	Self Report Altruism Scale ^a
Perspective Taking	r	.51**	.08	-.16*	.25*
	n	156	157	156	156
Empathic Concern	r	1.00	.04	.00	.22*
	n	156	156	155	155
Fantasy	r		1.00	.21**	.09
	n		158	156	156
Distress	r			1.00	-.22*
	n			156	155

Note: * indicates significance at the .05 level. ** indicates significance at the .01 level. ^a indicates that the variable was transformed using the square root of the original score.

Antisociality Intercorrelations

Childhood and Adolescent Taxon-SR scores were positively related to scores on the Social Symptomatology subscale, $r(158) = .28, p < .01$, as expected because these measures both purport to measure aspects of antisociality.

Aggression Intercorrelations

Aggression Questionnaire subscale intercorrelations are given in Table 7.

All correlations were significant at the .01 level, confirming the fact that the different types of aggression are related.

Table 7

Aggression Questionnaire Subscale Intercorrelations

		Verbal	Anger	Hostility
Physical	r	.52**	.49**	.64**
	N	156	157	157
Verbal	r	1.00	.57**	.74**
	N	158	157	158
Anger	r		1.00	.66**
	N		157	157

Note: ** indicates significance at the .01 level

Indignation/Vengeance Intercorrelations

Total Vengeance Scale scores were significantly positively related to Exaggerated Deservingness scores, $r(157) = .41, p < .01$, indicating that a sense of entitlement accompanies the need for vengeance.

BIS/BAS Intercorrelations

BIS/BAS scale intercorrelations are given in Table 8. Drive subscale scores were significantly related to Funseeking, Reward, total BAS score, and the ratio between BIS and BAS. Funseeking was significantly correlated with Reward, total BAS score, and the ratio between BIS and BAS. Reward was significantly correlated with BIS, total BAS score, and the ratio between BIS and BAS.

Table 8

BISBAS subscale intercorrelations

		BASfun	BASreward	BIS	BAS	BISBAS
BASdrive	r	.53**	.46**	.05	.81**	-.51**
	N	157	158	158	157	157
BASfun	r	1.00	.50**	.09	.85**	-.53**
	N	157	157	157	157	157
BASreward	r		1.00	.17*	.78**	-.40**
	N		158	158	157	157
BIS	R			1.00	.12	.70**
	N			158	157	157
BAS	R				1.00	-.60**
	N				157	157

Note: * indicates significance at the .05 level. ** indicates significance at the .01-level.

Group Differences on Dependent Variables

The groups were compared on all dependent variables using Analysis of Variance. Because impression management scores and age differed significantly between groups, both of these variables were covaried in the ANOVAs. Paulhus

and John (1998) suggested that Impression Management scores may be associated negatively with deviant behaviors, and, thus, should not be covaried in a study like this one. Analyses were also run without using Impression Management as a covariate. There were few differences from the original analyses, and these will be specified for each individual variable.

Groups differed significantly on impression management scores. $F(3, 153) = 3.14, p < .05$. Post hoc tests revealed that psychopaths had lower scores than nonpsychopathic inmates, $p < .05$. This finding was confirmed by the moderate negative correlation with Childhood and Adolescent Taxon-SR scores, $r(157) = -.24, p < .01$ and with Factor 2 of the PCL-R, $r(64) = -.43, p < .001$.

Total scores on the Balanced Inventory of Desirable Responding also differed between groups. $F(3, 153) = 3.19, p < .05$. Undergraduate participants had lower scores than nonpsychopathic inmates, $p < .05$.

Table 9 gives the results for ANOVAS comparing the 4 groups on all other dependent variables. As mentioned, age and Impression Management were used as covariates, to ensure that any differences that were found were due solely to group membership. Tests of predictions are evaluated at the .05 level. For variables where no a priori prediction was made, a Bonferroni adjustment was made. There were 5 variables without specific predictions, and an alpha level of .01 was used. Only significant F values will be discussed here. Offender samples alone were used when correlations with the PCL-R were calculated.

Table 9

ANOVA statistics for all dependent variables

Variable	Psychopath	Nonpsychopath	Community	Undergraduate
<u>Antisociality</u>				
Social Symptomatology _{transformed} *	3.95 (0.80) ^a	3.19 (0.71) ^b	3.81 (0.96) ^a	3.89 (0.61) ^a
Childhood and Adolescent Taxon-SR _{transformed} **	3.27 (0.58) ^a	2.41 (1.18) ^b	2.56 (0.88) ^b	1.43 (0.99) ^c
<u>Socially Desirable Responding</u>				
Holden Psychological Screening Inventory	49.31 (11.83)	39.90 (14.40)	46.58 (14.64)	40.24 (9.80)
<u>Indignation/Vengeance</u>				
Exaggerated Deservingness	54.85 (11.71)	53.94 (11.03)	58.42 (12.98)	54.26 (10.13)
Vengeance Scale _{transformed} **	8.29 (1.68) ^a	6.78 (1.37) ^b	8.09 (1.53) ^a	8.15 (1.10) ^a
<u>Behavioral Inhibition/Activation</u>				
BAS Drive	11.43 (2.21)	10.28 (2.54)	11.59 (2.06)	11.08 (2.40)
BAS Funseeking**	11.93 (2.39) ^a	9.91 (2.55) ^b	12.67 (2.15) ^a	12.87 (2.16) ^a
BAS Reward	16.62 (2.06)	16.29 (2.34)	16.72 (2.21)	17.46 (1.79)
BIS**	17.68 (3.19) ^a	19.08 (3.68) ^{a,b}	19.17 (3.65) ^{a,b}	20.55 (2.60) ^b
BAS**	39.99 (5.57) ^{a,b}	36.59 (6.10) ^a	40.98 (8.84) ^a	41.41 (5.38) ^a
BIS/BAS*	0.45 (0.12) ^a	0.53 (0.11) ^b	0.47 (0.09) ^{a,b}	0.51 (0.11) ^{a,b}
<u>Aggression</u>				
Physical Aggression	26.48 (4.07)	23.90 (4.31)	26.35 (4.34)	24.84 (4.61)
Verbal Aggression*	15.89 (3.91) ^a	12.78 (2.80) ^b	14.67 (3.65) ^{a,b}	15.16 (2.95) ^b
Anger	20.78 (4.09)	19.09 (3.50)	21.02 (4.22)	20.84 (4.07)
Hostility*	22.14 (5.72) ^a	18.00 (4.88) ^b	21.58 (6.49) ^a	20.92 (4.66) ^b
Aggression Questionnaire total*	85.29 (14.25) ^a	73.57 (11.98) ^b	83.62(16.73) ^a	81.76 (13.88) ^b
<u>Empathy/Altruism</u>				
Self Report Altruism Scale	58.51(16.55)	59.01(15.15)	61.56(12.26)	55.09 (9.01)
Perspective Taking*	18.06 (5.20) ^a	18.96 (5.44) ^a	15.69 (4.92) ^b	17.95 (4.79) ^a
Empathic Concern	17.99 (5.54)	18.89 (5.35)	18.19 (4.63)	18.92 (3.67)
Fantasy*	13.48 (3.36) ^{a,b}	11.67 (4.08) ^a	14.29 (4.52) ^b	15.42 (4.66) ^b
Distress	9.92 (5.16)	9.28 (4.36)	9.86 (4.76)	10.29 (4.08)
Affective Empathy	27.73 (7.63)	28.27 (6.19)	28.06 (7.03)	29.21 (5.69)
Cognitive Empathy	31.54 (6.51)	30.63 (6.34)	29.98 (7.95)	33.37 (6.98)
Empathy total	59.23 (12.81)	59.02 (9.47)	58.03(12.39)	62.57 (8.75)

Other Measures

Depression**	23.02 (6.72) ^a	19.26 (8.08) ^a	19.85 (7.65) ^a	14.94 (6.06) ^b
Psychiatric Symptomatology	10.06 (5.26)	9.99 (6.43)	11.28 (5.82)	9.83 (3.76)

Note: * indicates significance at the .05 level. ** indicates significance at the .01 level. Superscript letters give group differences in means. Groups with same letters did not differ significantly from one another. Transformed variables (square root) are identified by subscript.

Psychopathy/Antisociality

An analysis of variance revealed significant differences between groups on the Childhood and Adolescent Taxon-SR scale, $F(3, 154) = 24.75, p < .001$. Community members did not differ from nonpsychopathic inmates but scored significantly higher than the undergraduates, $p < .001$, as expected. Psychopaths scored significantly higher than all other groups, $p < .001$, confirming the construct validity of the Childhood and Adolescent Taxon-SR scale.

Similarly, groups differed in their scores on the Social Symptomatology subscale, $F(3, 151) = 3.83, p < .05$. Specifically, nonpsychopathic inmates scored significantly lower than the other 3 groups ($p < .05$).

Empathy/Altruism

There were no significant differences between groups on the Self Report Altruism Scale. However, scores were significantly negatively related to Factor 2 of the PCL-R, $r_{(64)} = -.28, p < .05$, indicating that higher scores on Factor 2 are associated with lower levels of altruism.

Groups differed significantly on their Fantasy scores, $F(3, 151) = 3.17, p < .05$, with nonpsychopathic inmates scoring significantly lower than the community and undergraduate samples, $p < .05$. Groups did not differ significantly on Personal Distress or Empathic Concern ($p > .05$), but differences

were found on Perspective Taking, $F(3, 151) = 3.05, p < .05$). Community members scored significantly lower than all other groups, $p < .05$. When Impression Management scores were not covaried, community members scored significantly lower than the nonpsychopathic inmates alone ($p < .05$). Interestingly, the only differences found on empathy were on the subscales measuring cognitive, rather than affective empathy.

Indignation/Vengeance

An analysis of variance revealed group differences on vengeance (using the transformed variable (square root)), $F(1, 151) = 5.61, p < .001$. Nonpsychopathic participants had significantly lower scores than the other 3 groups, $p < .05$. While psychopathic participants did not score significantly higher than the comparison groups, Childhood and Adolescent Taxon-SR scores were significantly positively correlated with scores on the Vengeance Scale, $r(158) = .22, p < .01$, as was Factor 2 of the PCL-R, $r(65) = .51, p < .05$. Contrary to the Cheater Hypothesis, however, there were no group differences on Exaggerated Deservingness, but scores were found to be positively correlated with Childhood and Adolescent Taxon-SR scores, $r(157) = .18, p < .05$.

Aggression

Groups differed significantly on the Verbal Aggression subscale of the Aggression Questionnaire, $F(3, 151) = 3.76, p < .05$. Psychopathic inmates scored significantly higher than nonpsychopathic inmates and undergraduates, $p < .05$. As would be expected, Verbal Aggression was positively correlated with

Factor 2 of the PCL-R, $r(65) = .39, p < .01$, and with Childhood and Adolescent Taxon-SR scores, $r(158) = .34, p < .01$.

Interestingly, Physical Aggression scores did not differ between the groups, but scores were positively correlated with Factor 2 of the PCL-R, $r(64) = .28, p < .05$, and with the Childhood and Adolescent Taxon-SR, $r(157) = .36, p < .01$. As well, when Impression Management scores were not covaried, nonpsychopathic inmates scored significantly lower than psychopaths ($p < .05$).

There were no group differences on the Anger subscale of the Aggression Questionnaire. Scores on this subscale were, however, positively related to Childhood and Adolescent Taxon-SR scores, $r(157) = .26, p < .01$.

Group differences did exist on the Hostility subscale, $F(3, 151) = 3.128, p < .05$. Specifically, nonpsychopathic inmates and undergraduates had lower scores than community members and psychopaths, $p < .05$. Also, Hostility scores showed a strong, positive correlation with Factor 2 of the PCL-R, $r(65) = .35, p < .01$, and with Childhood and Adolescent Taxon-SR scores, $r(158) = .36, p < .01$.

Total aggression scores were significantly different between groups, $F(1, 151) = 3.57, p < .05$. Nonpsychopathic inmates and undergraduates scored significantly lower than community members and psychopaths, $p < .01$. When Impression Management scores were left out of the analysis, undergraduates did not score significantly differently from other groups.

Behavioral Inhibition/Activation

Scores on the Drive subscale did not differ between groups. They were, however, positively correlated with Factor 2 of the PCL-R, $r(65) = .28, p < .05$.

and Childhood and Adolescent Taxon-SR scores, $r(158) = .20, p < .05$, indicating that higher levels of psychopathy are accompanied by higher drive. As well, when the analysis was run without covarying Impression Management scores.

nonpsychopathic inmates did score significantly lower than community members ($p < .05$).

Funseeking scores differed significantly between the groups, $F(3, 151) = 8.93, p < .001$. Post hoc tests showed that nonpsychopathic inmates scored significantly lower than than all other groups, $p < .01$. As well, scores were significantly correlated with Factor 2 of the PCL-R, $r(64) = .46, p < .01$.

Behavioral Activation Score (BAS: composite of above 3 variables) did differ significantly between groups, $F(3, 150) = 3.90, p < .01$, with nonpsychopathic inmates scoring significantly lower than community and undergraduate participants, $p < .05$. They also tended to score lower than psychopathic participants, although not significantly ($p = .07$). When Impression Management scores were left out of the analysis, the difference between psychopaths and nonpsychopathic inmates was significant ($p < .05$). BAS scores were significantly positively correlated with Factor 2 of the PCL-R, $r(64) = .33, p < .01$.

Group differences emerged in the total Behavioral Inhibition score (BIS), $F(3, 151) = 4.10, p < .01$). Specifically, psychopaths scored significantly lower than undergraduates, $p < .051$. BIS scores were significantly negatively correlated with Childhood and Adolescent Taxon-SR scores, $r(158) = -.19, p < .05$, and with Factor 2 of the PCL-R, $r(65) = -.25, p < .05$.

The final variable is BIS/BAS (ratio between Behavioral Inhibition and Behavioral Activation). The groups differed significantly on this variable. $F(3, 150) = 2.59, p = .05$, with nonpsychopathic inmates scoring significantly higher than psychopaths, $p < .05$. The ratio was also correlated significantly with Childhood and Adolescent Taxon-SR scores, $r(157) = -.23, p < .01$, and with Factor 2 of the PCL-R, $r(64) = -.41, p < .001$.

Other Measures

Scores on the Depression subscale of the Holden Psychological Screening Inventory differed significantly between groups. $F(3, 151) = 4.59, p < .01$. Undergraduates had significantly lower scores on this variable than did other groups, $p < .05$.

Psychopaths versus Nonpsychopathic inmates

In the following analyses, only psychopathic and nonpsychopathic participants were included, as these were the groups of primary interest and the only groups for which there were Psychopathy Checklist scores. T-tests were used to determine differences between groups. Table 10 gives means on all dependent variables.

Table 10

Comparing Means for Psychopaths and Nonpsychopathic inmates

Variable	Group	N	Mean	SD
<u>Empathy/Altruism</u>				
Perspective Taking	Nonpsychopath	39	18.96	5.44
	Psychopath	37	18.06	5.20
Empathic Concern	Nonpsychopath	38	18.89	5.35
	Psychopath	37	17.99	5.54
Fantasy*	Nonpsychopath	40	11.67	4.08

	Psychopath	37	13.48	3.36
Distress	Nonpsychopath	39	9.28	4.36
	Psychopath	36	9.92	5.16
Affective Empathy	Nonpsychopath	38	28.27	6.19
	Psychopath	36	27.73	7.63
Cognitive Empathy	Nonpsychopath	39	30.63	6.34
	Psychopath	37	31.54	6.51
Self Report Altruism	Nonpsychopath	39	59.01	15.15
	Psychopath	37	58.51	16.55
<u>Aggression</u>				
Physical Aggression**	Nonpsychopath	39	23.90	4.31
	Psychopath	37	26.48	4.07
Verbal Aggression**	Nonpsychopath	40	12.78	2.80
	Psychopath	37	15.89	3.91
Anger	Nonpsychopath	39	19.09	3.50
	Psychopath	37	20.78	4.09
Hostility**	Nonpsychopath	40	18.01	4.88
	Psychopath	37	22.14	5.72
<u>Inhibition/Activation</u>				
Drive*	Nonpsychopath	40	10.28	2.54
	Psychopath	37	11.43	2.21
Funseeking**	Nonpsychopath	39	9.91	2.55
	Psychopath	37	11.94	2.39
Reward	Nonpsychopath	39	16.29	2.34
	Psychopath	37	16.62	2.06
BIS*	Nonpsychopath	40	19.08	3.68
	Psychopath	37	17.68	3.19
BAS*	Nonpsychopath	39	36.59	6.10
	Psychopath	37	39.99	5.57
BIS/BAS**	Nonpsychopath	39	0.53	0.11
	Psychopath	37	0.45	0.12
<u>Indignation/Vengeance</u>				
Exaggerated Deservingness	Nonpsychopath	39	53.94	11.03
	Psychopath	37	54.85	11.71

Vengeance Scale**	Nonpsychopath	40	6.78	1.37
	Psychopath	37	8.29	1.68

Note: Vengeance Scale scores were transformed using square root transformation. * indicates significance at the .05 level. ** indicates significance at the .01 level.

Cheater Hypothesis

As predicted, psychopathic offenders scored significantly higher than nonpsychopathic inmates on the Vengeance Scale (note: these values are square roots of actual scores).

In terms of empathy, the psychopaths and nonpsychopathic inmates only differed on the Fantasy subscale. On this cognitive element of empathy, psychopaths scored significantly higher than nonpsychopathic inmates. It was predicted that psychopaths would show higher levels of cognitive empathy than affective empathy. This was, in fact, the case ($mean_{cog} = 31.5$, $mean_{aff} = 27.73$; $t(35) = 3.596$, $p < .001$). As predicted, this difference was not seen in nonpsychopathic inmates ($mean_{cog} = 30.75$, $mean_{aff} = 28.27$; $t(37) = 1.851$, $p = .072$).

Warrior-Hawk Hypothesis

Under the Warrior-Hawk hypothesis, higher levels of aggression were predicted for psychopaths. On the Physical Aggression subscale of the Aggression Questionnaire, psychopaths reported more physical aggression than nonpsychopathic inmates. Similarly, psychopaths scored higher on the Verbal Aggression subscale. Psychopathic participants rated themselves higher on the Anger subscale, although not significantly, $p = .06$. Finally, psychopaths scored higher on Hostility than their nonpsychopathic counterparts. Not surprisingly,

psychopaths scored higher on overall aggression (composite of 4 subscales), $p < .001$.

A second prediction was that psychopaths would show lower levels of inhibition. This was confirmed by the lower scores on the BIS scale, $p < .05$. Accompanying this lack of inhibition, the psychopathic group showed higher drive as measured by the BASdrive, $p < .05$, and BASfunseeking, $p < .01$. The ratio of inhibition to activation was significantly lower in psychopaths than nonpsychopathic inmates, $p < .01$.

General Predictions

It was predicted that correlations amongst the measures of interest would only hold when both groups were included in the analysis. The correlation matrix for all of the inmate participants is in Table 10. As was expected, most of the correlations were significant.

Table 11

Scale intercorrelations using psychopaths and nonpsychopathic inmates

		Aggression	BIS/BAS	Exaggerated Deservingness	Vengeance Scale ^a	Self Report Altruism
Empathy	r	-.21	.28*	-.23*	-.25*	.16
	N	74	73	74	74	74
Aggression	r	1.00	-.31**	.28*	.59**	-.02
	N		75	76	76	76
BIS/BAS	r		1.00	-.12	-.37**	-.02
	N			75	76	75
Exaggerated Deservingness	r			1.00	.33**	-.25*
	N				76	76
Vengeance Scale ^a	r				1.00	-.23*
	N					76

Note: * indicates significance at the .05 level. ** indicates significance at the .01 level. ^a indicates that variable has undergone a square root transformation

When correlations were run within each group, a different picture emerged. Tables 11 and 12 give the correlation coefficients for nonpsychopathic inmates and psychopaths respectively. For nonpsychopathic inmates, only 2 correlations remained significant, supporting the prediction. However, numerous correlations remained significant in the psychopathic sample.

Table 12

Scale intercorrelations using nonpsychopathic participants

		Aggression	BIS/BAS	Exaggerated Deservingness	Vengeance Scale ^a	Self Report Altruism
Empathy	r	-.02	.28	-.21	-.05	.28
	N	38	37	38	38	38
Aggression	r	1.00	-.11	.28	.47**	-.27
	N		38	39	39	39
BIS/BAS	r		1.00	-.01	-.12	-.04
	N			38	39	38
Exaggerated Deservingness	r			1.00	.21	-.28
	N				39	39
Vengeance Scale ^a	r				1.00	-.57**
	N					39

Note: ** indicates significance at the .01 level. ^a indicates that the variable has undergone square root transformation.

Table 13

Scale intercorrelations using psychopathic and nonpsychopathic participants

		Aggression	BIS/BAS	Exaggerated Deservingness	Vengeance Scale ^a	Self Report Altruism
Empathy	r	-.39*	.31	-.25	-.44**	.07
	N	36	36	36	36	36

Aggression	r	1.00	-.30	.30	.53**	.18
	N		37	37	37	37
BIS/BAS	r		1.00	-.22	-.39*	-.06
	N			37	37	37
Exaggerated Deservingness	r			1.00	.46**	-.22
	N				37	37
Vengeance Scale ^a	r				1.00	-.01
	N					37

Note: * indicates significance at the .05 level. ** indicates significance at the .01 level. ^a indicates that the variable has undergone square root transformation.

Predicting Group Membership

A logistic regression was run to examine the influence of Impression Management in predicting group membership. In order to remove variance in the dependent variables that was associated with Impression Management scores, the logistic regression was run with this variable only. The model was significant, $\chi^2(1, N = 77) = 7.42, p < .01$, and correctly classified 57.9% of the cases into psychopaths and nonpsychopathic inmates. The regression coefficient for Impression Management was significant, $Wald(1) = 6.43, p < .05$. Unstandardized residuals were saved as a new variable, in order to analyze the influence of the variables of interest with variance explained by Impression Management removed. A multiple regression predicting residuals, incorporating BIS/BAS, Aggression totals, Empathy, Exaggerated Deservingness, Self Report Altruism scores, and transformed Vengeance scores was found to be significant, $F(6, 66) = 2.40, p < .05$. The equation accounted for 18% of the variance in the residuals. The only significant coefficient was the transformed Vengeance total score, $t(1, \text{one tailed}) = 1.74, p < .05$.

Supplementary Analyses

Two sets of extra analyses were conducted to determine which Factor of the PCL-R carries the weight of prediction, in terms of the variables employed in the present study. These tests do not examine the utility of the Cheater and Warrior-Hawk hypotheses. They merely determine which of the PCL-R factors is more useful when looking at the variables that were used in this study. Because PCL-R scores were only available for the inmate samples, these were the only 2 samples included in the analyses. First, a median split was used on Factor 1 scores ($median = 7$), and the resulting groups (low and high Factor 1) were compared on variables used in the study. T-tests were used to determine differences on all dependent variables. Significant differences were only found on 2 variables: BASfunseeking ($mean_{high} = 11.36$, $mean_{low} = 10.09$; $t(62) = 1.86$, $p < .05$) and Social Symptomatology (note: these values are square roots of the original scores: $mean_{high} = 3.71$, $mean_{low} = 3.31$; $t(63) = 1.99$, $p < .05$).

The second set of analyses involved a median split on Factor 2 of the PCL-R ($median = 10.1$) (groups are high and low). Significant differences were found in empathy, altruism, aggression, drive, inhibition, social desirability, antisociality, and indignation/vengeance.

Empathy/Altruism

Individuals scoring high on Factor 2 had higher scores on Perspective Taking (a measure of cognitive empathy) than the low group ($mean_{high} = 18.96$, $mean_{low} = 18.06$; $t(62) = 1.69$, $p < .05$). As well, they showed lower scores on

altruism (note: these values are square roots of the original scores; $mean_{high} = 7.27$, $mean_{low} = 7.86$; $t(62) = -2.50$, $p < .01$).

Aggression

The high Factor 2 group exhibited higher levels of aggression on most of the Aggression Questionnaire subscales; Physical Aggression ($mean_{high} = 25.75$, $mean_{low} = 23.68$; $t(62) = 1.98$, $p < .05$), Verbal Aggression ($mean_{high} = 15.21$, $mean_{low} = 12.84$; $t(63) = 2.94$, $p < .01$), Hostility ($mean_{high} = 21.39$, $mean_{low} = 18.29$; $t(63) = 2.39$, $p < .01$), and overall Aggression ($mean_{high} = 83.06$, $mean_{low} = 73.75$; $t(62) = 2.94$, $p < .01$).

Inhibition/Activation

Higher levels of drive were exhibited by the High Factor 2 group, as evidenced by their scores on BASdrive ($mean_{high} = 11.48$, $mean_{low} = 10.26$; $t(63) = 2.11$, $p < .05$), BASfunseeking ($mean_{high} = 11.81$, $mean_{low} = 9.58$; $t(62) = 3.46$, $p < .01$), and total BAS score ($mean_{high} = 39.81$, $mean_{low} = 36.30$; $t(62) = 2.34$, $p < .05$).

Inhibition scores were lower for those individuals who were high on Factor 2 ($mean_{high} = 17.19$, $mean_{low} = 19.32$; $t(63) = -2.44$, $p = .01$). Finally, the ratio between inhibition and activation was smaller for those scoring high on Factor 2 ($mean_{high} = 0.44$, $mean_{low} = 0.54$; $t(62) = 3.60$, $p < .001$).

Social Desirability

The high Factor 2 group seemed less concerned with Impression Management than the low group ($mean_{high} = 4.55$, $mean_{low} = 6.47$; $t(62) = 2.29$, $p < .05$), mirroring the findings when examining all groups. The high and low

Factor 2 groups did not score differently on total Holden Psychological Screening Inventory scores. however ($t(69) = 0.323, p > .05$).

Antisociality

As would be expected, the high group scored higher on the Childhood and Adolescent Taxon-SR ($mean_{high} = 11.53, mean_{low} = 6.59; t(63) = 4.93, p < .001$) and Social Symptomatology scales (note: these values are square roots of the original scores; $mean_{high} = 3.93, mean_{low} = 3.10; t(63) = 4.53, p < .001$).

Indignation/Vengeance

Vengeance scores were also significantly higher in the High Factor 2 group than in the Low group (note: these values are square roots of the original scores; $mean_{high} = 8.46, mean_{low} = 6.74; t(63) = 4.76, p < .001$).

Discussion

The present study sought to evaluate the plausibility and utility of the Cheater and Warrior-Hawk hypotheses in explaining the origins of psychopathy. Both hypotheses were partially supported, but an amalgamation of the two proposed strategies is necessary in order to explain the results.

Cheater Hypothesis

As predicted, psychopaths scored higher on the Vengeance Scale than nonpsychopathic inmates. However, when all 4 groups were included, nonpsychopathic offenders scored lower than all of the other groups. The fact that psychopathic offenders did not differ significantly from undergraduate and community samples might indicate that psychopaths exhibit behaviors similar to “normals”, and, consequently, would be difficult to identify in everyday interactions. Vengeance Scale scores were also significantly, positively correlated with the Childhood and Adolescent Taxon-SR and with Factor 2 of the PCL-R (antisocial lifestyle), further supporting the idea that increased antisociality is associated with increased vengeance motive. As was mentioned previously, vengeance was strongly related to total aggression scores, and may not be a clear representation of indignation. Many of the items on the Vengeance Scale are related to physical or other aggression in terms of manifest content. In fact, revenge is defined as the intention to harm another for a perceived wrong. Thus, the fact that psychopathy is positively correlated with vengeance also supports the Warrior-Hawk Hypothesis. One of the most important findings was that

vengeance scores were the only variable selected to predict group membership in a multiple regression.

A second prediction under the Cheater Hypothesis was that psychopaths would exhibit less empathy than nonpsychopathic inmates. In fact, psychopaths displayed more empathy than their nonpsychopathic counterparts on the Fantasy subscale of the Interpersonal Reactivity Index. In terms of all 4 groups, however, nonpsychopathic offenders scored lower than community and undergraduate participants, as well. A more specific prediction looked at the difference between scores on cognitive and affective empathy. As predicted, psychopaths scored higher on cognitive empathy than they did on affective empathy. This was not the case with nonpsychopathic offenders. Overall, then, psychopaths do not appear to display lower empathy levels than nonpsychopathic inmates, as would be expected if manipulation and its associated skills require some form of empathy (cognitive or otherwise), but they did show higher levels of cognitive than affective empathy.

The Cheater Hypothesis also predicted that psychopaths would score lower on measures of altruism than nonpsychopathic inmates. While psychopaths scored lower, the difference was not significant. However, Self Report Altruism scores were negatively correlated with Factor 2 of the PCL-R, indicating that psychopathic individuals are less likely to be altruistic.

An interesting finding that supports the Cheater Hypothesis revolves around the differences found when all groups were included in the analyses. On a number of variables, the nonpsychopathic sample scored differently than the other

three samples, with no other differences emerging between the groups. In other words, the psychopaths resembled the control groups more than the nonpsychopathic inmates did. Often, where significant differences were found, the nonpsychopathic inmates differed from the other 3 groups, who did not differ from each other (Fantasy, Vengeance) or nonpsychopathic inmates combined with undergraduates were different from psychopaths and community participants (Hostility, Behavioral Activation). Correlational patterns also support the idea that the psychopaths resembled the community groups, consistent with Trivers' (1971) notion of "subtle cheating".

When psychopaths and nonpsychopathic inmates were combined, many correlations between the measures of interest were significant. However, when split into groups, the nonpsychopathic offenders did not display the same pattern as the psychopaths. Nonpsychopathic inmates showed a negative correlation between altruism and vengeance. Psychopaths, however, did not. Other variables, though, were highly correlated in the psychopathic sample. For instance, vengeance was negatively related to empathy and the ratio of inhibition to activation and is positively correlated with exaggerated deservingness. The only matching correlation in the nonpsychopath and control groups was that of altruism and vengeance, whereas, many correlations matched when comparing psychopathic participants to controls.

It is possible that the psychopathic group had a cutoff that was too low (25 instead of 30) so the analysis was redone using only those scoring 30 and above, and the same pattern of correlations emerged for the psychopathic group. It

seems, then, that there is a different pattern of correlations for psychopaths and nonpsychopathic inmates. One interesting finding was that vengeance scores were not related to altruism or empathy in psychopaths. Exaggerated deservingness, as well, was not related to either of these variables. These findings fit the idea that psychopaths are instrumental in being "altruistic". It is not affected by their feelings. In the comparison groups and nonpsychopathic inmates, altruism was negatively correlated with vengeance scores. The differences in the correlational patterns are consistent, as well, with the idea of "subtle cheating".

Overall, the resemblance of the psychopaths to the comparison groups is consistent with the idea that psychopaths are cheaters in social interactions. If a cheater is to be successful, it would be necessary to hide his/her intentions. If cheaters were readily identifiable, others would refuse to interact with them. By appearing to be so normal, they are probably able to engage in more interactions than they would be able to otherwise.

The fact that the nonpsychopathic offenders often differed from the other 3 groups on the test variables suggests that there may be another trait and/or traits that would account for group differences. For example, nonpsychopathic inmates scored lower on the Fantasy subscale of the Interpersonal Reactivity Index, on the Vengeance Scale, and on the BAS subscale of the BISBAS. All of these differences seem to suggest that nonpsychopathic inmates are less likely than the other samples to act on their impulses, indicating some sort of behavioral inhibition. This is supported by the concept of overcontrolled hostility in murderers. The basic idea is that extremely unassertive individuals who are

repeatedly provoked sometimes explode into murderous rage (Quinsey, Maguire, & Varney, 1983), thus having a limited criminal history but a very serious index offense. If this were the case with an appreciable number of nonpsychopathic inmates, it would be expected that they would have fewer crimes on record, and would have a less extensive juvenile record. Contradicting this interpretation, the nonpsychopathic participants had rather extensive adult criminal histories, much like the psychopathic group. They did not have as many violent juvenile offenses as the psychopaths, but total number of juvenile convictions did not differ. Consistent with the idea of overcontrolled hostility, the total number of violent offenses was lower in the nonpsychopathic than in the psychopathic group.

Warrior-Hawk Hypothesis

A number of predictions were made under the framework of the Warrior-Hawk Hypothesis. The first was that psychopaths would display higher levels of aggression than nonpsychopathic inmates. This was not the case with Physical Aggression. However, Factor 2 of the PCL-R and the Childhood and Adolescent Taxon-SR were significantly, positively correlated with Physical Aggression. On the Verbal Aggression subscale, psychopaths scored higher than nonpsychopathic inmates, in accordance with the prediction. However, when all 4 groups were included in the analysis, psychopaths only scored higher than nonpsychopathic offenders and undergraduates. Community members, as well, with their elevated Childhood and Adolescent Taxon-SR and Social Symptomatology scores, were expected to score fairly high on Verbal Aggression, and there were no differences between the community sample and other participants. Factor 2 of the PCL-R and

the Childhood and Adolescent Taxon-SR were positively related to Verbal Aggression scores. On the Anger subscale, psychopaths scored higher than nonpsychopathic offenders. Otherwise, there were no group differences on this variable. The final subscale of the Aggression Questionnaire was Hostility. Again, psychopaths scored higher than nonpsychopathic offenders. The community sample, however, did not differ significantly from the psychopathic sample. Hostility was positively correlated with Factor 2 of the PCL-R and the Childhood and Adolescent Taxon-SR.

A second prediction based on the Warrior-Hawk hypothesis was that psychopaths would have lower levels of inhibition and higher drive than nonpsychopathic inmates. According to the BIS scale, this was definitely the case. As well, psychopaths appeared to have higher drive. The BASdrive scale is positively associated with the Childhood and Adolescent Taxon-SR and Factor 2 of the PCL-R. On the funseeking subscale, psychopaths again scored higher than nonpsychopathic offenders. However, nonpsychopathic offenders scored lower than all other groups, and psychopaths did not differ from the undergraduate and community samples. Funseeking is, however, positively related to Factor 2 of the PCL-R. The final subscale of the BAS is reward. Again, psychopaths scored more highly than nonpsychopathic inmates. As predicted, psychopaths displayed a smaller ratio between inhibition and activation than nonpsychopathic inmates.

The Combined Model

All in all, the Cheater and Warrior-Hawk hypotheses were both supported, and needed to be combined to fully explain the origins of psychopathy. This is

consistent with a recent factor analysis of traits and behaviors associated with psychopathy in a community sample, finding 3 main domains : aggression (consistent with the Warrior-Hawk Hypothesis), antisociality (consistent with the Cheater Hypothesis), and mating effort (Quinsey, Book, and Lalumière, submitted). From the results of this study, it would seem that psychopathic individuals are, in fact, not only prone to cheat, but also to use intimidation to achieve their ends. This is supported by the findings of higher aggression and vengeance, and the existence of a negative correlation between Factor 2 of the PCL-R and altruism scores. One or the other of the evolutionary explanations of psychopathy, then, would not be sufficient in explaining the full range of behaviors. Not only are psychopaths cheaters, they tend to use aggression (physical or otherwise) to get what they want. In future research, it would be useful to examine the conditions under which psychopathic individuals would use cheating and aggression.

Which Factor of the PCL-R is more Predictive?

It appears that Factor 2 is more predictive of behavior than is Factor 1. A median split of Factor 1 scores was followed by ANOVAs on all relevant variables. Differences were found on BASfunseeking and Social Symptomatology. Individuals with high scores on Factor 1 scored higher on both of these scales. A median split of Factor 2 scores resulted in several differences. Those individuals with higher scores on Factor 2 scored lower on empathy, altruism, inhibition, and impression management, while scoring higher on aggression, drive, antisociality, and vengeance. It would appear, then, that

individuals scoring higher on Factor 2 are more likely to resemble the Cheater/Warrior-Hawk discussed above than the traditional cutoffs used on the full scale PCL-R score. This mirrors what was found by Harris, Rice, and Quinsey (1994) in their taxometric analysis, namely that Factor 2 items are more predictive of group membership.

Limitations

As with any research project, there were several limitations in this study. First, the characteristics of the sample need to be discussed. The community participants, for example, were more antisocial than might naively be expected. They scored just as highly on measures of antisociality as the nonpsychopathic inmate group. As well, the undergraduate sample was considerably younger than the other groups, which may have affected certain results. In both cases, the comparison groups were less than ideal. Another limitation in this study involves the use of self-report measures as opposed to behavioral measures. It may have produced more accurate results if we had used ratings from others, or other behavioral measures of aggression, indignation, empathy and altruism.

Inter-rater reliability estimates were not possible for the PCL-R in this study. Although all PCL-R raters had been trained, it is not clear whether the ratings were consistent across individuals. Because group membership was decided solely on the basis of these scores, it is possible that group assignment was not correct in all cases, even though the psychopathic group scored significantly higher than the nonpsychopathic inmates on all measures of antisociality.

Future Research

Future studies may wish to examine these issues through the use of the prisoner's dilemma and chicken games, and through ratings of behavior. As well, it may be that psychopaths are mimics, and will not appear to be different from normals on many variables. This needs to be examined thoroughly if we are to get an accurate picture of the strategies utilized by psychopaths, and if we are to discover whether, and in what way, psychopaths differ from normals. What is clear, is that psychopathic inmates, undergraduates, and community samples differed markedly from nonpsychopathic inmates.

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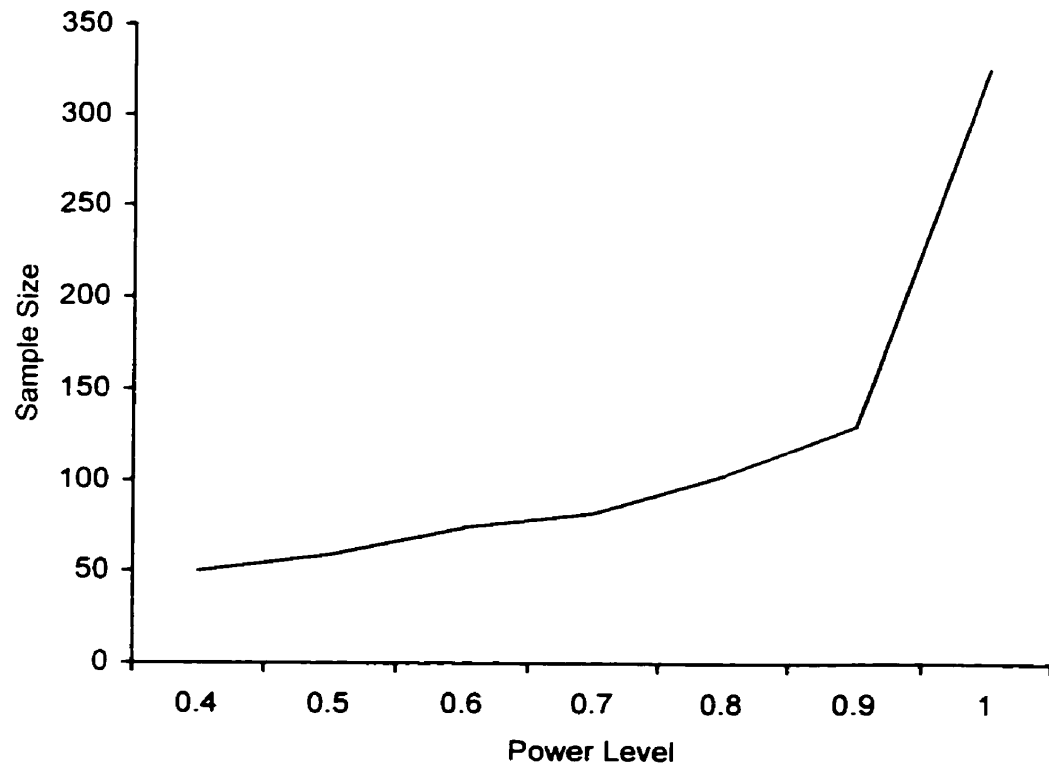
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Figure Captions

Figure 1. Power Graph for Medium Effect Size and 7 Predictors



Source: GPOWER (1992)

Appendix A: Payoff outcomes of the Prisoner's Dilemma Game

		What you do	
		Cooperate	Defect
What I do	Cooperate	Fairly Good REWARD (for mutual cooperation)	Very Bad SUCKER'S PAYOFF
	Defect	Very Good TEMPTATION (to defect)	Fairly Bad PUNISHMENT (for mutual defection)

Source: Dawkins (1976)

Appendix B: Measures Employed in the Present Study

Psychopathy Checklist-Revised

Factor 1 Items

1. Glibness/superficial charm
 2. Grandiose sense of self-worth
 3. Pathological lying
 4. Conning/manipulative
 5. Lack of remorse or guilt
 6. Shallow affect
 7. Callous/lack of empathy
 8. Failure to accept responsibility
-

Factor 2 Items

1. Proneness to boredom
 2. Parasitic lifestyle
 3. Poor behavior controls
 4. Early behavior problems
 5. Lack of realistic long-term goals
 6. Impulsivity
 7. Irresponsibility
 8. Juvenile delinquency
 9. Revocation of conditional release
-

Source: Hare (1991).

Note: items not loading on either factor include promiscuous sexual behavior, many short-term marital relationships, and criminal versatility.

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BIS/BAS Scales

Each item of this questionnaire is a statement that a person may either agree with or disagree with. For each item, indicate how much you agree or disagree with what the item says. Please respond to all of the items: do not leave any blank. Choose only one response for each statement. Please be as accurate and honest as you can be. Respond to each item as if it were the only item. Choose from the following response options:

1=very true for me

2=somewhat true for me

3=somewhat false for me

4=very false for me

1. A person's family is the most important thing in life. _____
2. Even if something bad is about to happen to me, I rarely experience fear or nervousness. _____
3. I go out of my way to get things I want. _____
4. When I'm doing well at something I love to keep at it. _____
5. I'm always willing to try something new if I think it will be fun. _____
6. How I dress is important to me. _____
7. When I get something that I want, I feel excited and energized. _____
8. Criticism or scolding hurts me quite a bit. _____

9. When I want something I usually go all-out to get it. _____
10. I will often do things for no other reason than that they might be fun. _____
11. It's hard for me to find the time to do things such as get a haircut. _____
12. If I see a chance to get something I want, I move on it right away. _____
13. I feel pretty worried or upset when I think or know somebody is angry at me. _____
14. When I see an opportunity for something I like, I get excited right away. _____
15. I often act on the spur of the moment. _____
16. If I think something unpleasant is going to happen, I usually get pretty worked up. _____
17. I often wonder why people act the way they do. _____
18. When good things happen to me, it affects me strongly. _____
19. I feel worried when I think I have done poorly at something important. _____
20. I crave excitement and new sensations. _____
21. When I go after something I use a "no holds barred" approach. _____
22. I have very few fears compared to my friends. _____
23. It would excite me to win a contest. _____
24. I worry about making mistakes. _____

Source: Carver & White (1994).

Holden Psychological Screening Inventory (HPSI)

Please indicate how frequently each of the following occurs by circling the appropriate letter indicator.

N=never

S=sometimes

O=often

V=very often

A=always

1.I have trouble standing up.	N	S	O	V	A
2.When I hurt, I get revenge.	N	S	O	V	A
3.My life is interesting. .	N	S	O	V	A
4.I drink alcohol.	N	S	O	V	A
5.I have trouble walking.	N	S	O	V	A
6.I have taken advantage of the opposite sex.	N	S	O	V	A
7.I am friendly.	N	S	O	V	A
8.I feel faint.	N	S	O	V	A
9.I am a discipline problem for people in charge.	N	S	O	V	A
10.I belong to clubs.	N	S	O	V	A
11.I have an upset stomach.	N	S	O	V	A
12.I use drugs and chemicals.	N	S	O	V	A

13.Odd parts of my body ache.	N	S	O	V	A
14.I abuse alcohol.	N	S	O	V	A
15.I get very dizzy.	N	S	O	V	A
16.I behave recklessly.	N	S	O	V	A
17.To me, shadows look like people or animals.	N	S	O	V	A
18.I mind taking orders.	N	S	O	V	A
19.I feel contented.	N	S	O	V	A

SD=strongly disagree

D=disagree

U=unsure

A=agree

SA=strongly agree

20.Harmless things can disturb me.	SD	D	U	A	SA
21. Small things upset me.	SD	D	U	A	SA
22. Things are looking up.	SD	D	U	A	SA
23. I like myself.	SD	D	U	A	SA
24. I could commit a successful crime.	SD	D	U	A	SA
25. I like what I do.	SD	D	U	A	SA
26. Salespeople cheat their customers.	SD	D	U	A	SA
27. I am a good leader.	SD	D	U	A	SA
28. I am happier than others.	SD	D	U	A	SA

29. My legs are weak.	SD	D	U	A	SA
30. I respect a successful criminal.	SD	D	U	A	SA
31. I am satisfied.	SD	D	U	A	SA
32. I dislike the interference of others.	SD	D	U	A	SA
33. I am interesting to talk with.	SD	D	U	A	SA
34. Trying something new is scary.	SD	D	U	A	SA
35. I panic more quickly than others.	SD	D	U	A	SA
36. I try to meet lots of people.	SD	D	U	A	SA

Source: Holden (1996).

Vengeance Scale

Listed below are a number of statements that describe attitudes that different people have. There are no right or wrong answers, only opinions. Read each item and decide whether you agree or disagree and to what extent. If you strongly agree, circle 7; if you strongly disagree circle 1; if you feel somewhere in between circle any one of the numbers between 1 and 7. If you feel neutral or undecided, the midpoint is 4.

1=disagree strongly

2=disagree

3=disagree slightly

4=neither agree nor disagree

5=agree slightly

6=agree

7=agree strongly

Disagree

Agree

1 2 3 4 5 6 7

It's not worth my time or effort to pay back someone who has wronged me.

1 2 3 4 5 6 7

It is important for me to get back at people who have hurt me.

- 1 2 3 4 5 6 7 I try to even the score with anyone who hurts me.
- 1 2 3 4 5 6 7 It is always better not to seek vengeance.
- 1 2 3 4 5 6 7 I live by the motto "Let by-gones be by-gones".
- 1 2 3 4 5 6 7 There is nothing wrong in getting back at someone who has hurt you.
- 1 2 3 4 5 6 7 I don't just get mad, I get even.
- 1 2 3 4 5 6 7 I find it easy to forgive those who have hurt me.
- 1 2 3 4 5 6 7 I am not a vengeful person.
- 1 2 3 4 5 6 7 I believe in the motto "An eye for an eye, a tooth for a tooth".
- 1 2 3 4 5 6 7 Revenge is morally wrong.
- 1 2 3 4 5 6 7 If someone causes me trouble, I'll find a way to make them regret it.
- 1 2 3 4 5 6 7 People who insist on getting revenge are disgusting.
- 1 2 3 4 5 6 7 If I am wronged, I can't live with myself unless I get revenge.
- 1 2 3 4 5 6 7 Honour requires that you get back at someone who has hurt you.

1	2	3	4	5	6	7	It is usually better to show mercy than to take revenge.
1	2	3	4	5	6	7	Anyone who provokes me deserves the punishment that I give them.
1	2	3	4	5	6	7	It is always better to “turn the other cheek”
1	2	3	4	5	6	7	To have a desire for vengeance would make me feel ashamed.
1	2	3	4	5	6	7	Revenge is sweet.

Source: Stuckless & Goranson (1992).

Interpersonal Reactivity Index

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E. when you have decided on your answer, fill in the letter in the answer space following the item. **READ EACH ITEM CAREFULLY BEFORE RESPONDING.** Answer as honestly and accurately as you can. Thank you.

ANSWER SCALE

A B C D E

Does not describe me at all

Describes me well

1. I daydream and fantasize, with some regularity, about things that might happen to me. _____
2. I often have tender, concerned feelings for people less fortunate than me. _____
3. I sometimes find it difficult to see things from the "other guy's" point of view. _____
4. Sometimes I don't feel very sorry for other people when they are having problems. _____
5. I really get involved with the feelings of the characters in a novel. _____

6. In emergency situations, I feel apprehensive and ill-at-ease. _____
7. I am usually objective when I watch a movie or play and I don't get completely caught-up in it. _____
8. I try to look at everybody's side of a disagreement before I make a decision. _____
9. When I see someone being taken advantage of, I feel kind of protective towards them. _____
10. I sometimes feel helpless when I am in the middle of a very emotional situation. _____
11. I sometimes try to understand my friends better by imagining how things look from their perspective. _____
12. Becoming extremely involved in a good book or movie is somewhat rare for me. _____
13. When I see someone get hurt, I tend to remain calm. _____
14. Other people's misfortunes do not usually disturb me a great deal. _____
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. _____
16. After seeing a play or movie, I have felt as though I were one of the characters. _____
17. Being in a tense emotional situation scares me. _____
18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. _____
19. I am usually pretty effective in dealing with emergencies. _____

20. I am often quite touched by things that I see happen. _____
21. I believe that there are two sides to every question and try to look at them both. _____
22. I would describe myself as a pretty soft-hearted person. _____
23. When I watch a good movie, I can very easily put myself in the place of the leading character. _____
24. I tend to lose control during emergencies. _____
25. When I am upset at someone, I usually try to "put myself in his shoes" for a while. _____
26. When I am reading an interesting story or novel, I imagine how I would feel if events in the story were happening to me. _____
27. When I see someone who badly needs help in an emergency, I go to pieces.

28. Before criticizing somebody, I try to imagine how I would feel if I were in their place. _____

Source: Davis (1980).

Irresponsibility and Insensitivity Scale

Please read each statement and indicate whether you think the statement is true or false by circling T (for true) or F (for False).

T=True

F=False

- T F 1. The crimes I commit cost society in many ways.
- T F 2. The media exaggerates how much crime there is.
- T F 3. When someone in my family is upset the best thing to do is stay away until it blows over.
- T F 4. It upsets me when people are mad at me.
- T F 5. Anyone I have hurt by my crimes deserved what they got.
- T F 6. Thinking about the crime(s) I committed makes me feel bad.
- T F 7. Cheating on welfare, UI or disability is not really a crime because no one gets hurt.
- T F 8. Children know how to do things to get on my nerves.
- T F 9. If people are stupid enough to allow someone to rob them, they probably deserve it.
- T F 10. When I commit a crime, the most it does is affect one or two people.
- T F 11. When children are afraid, I know how to reassure them.
- T F 12. I am good at listening to other people's problems.
- T F 13. Young children are not affected by crimes that they do not understand.
- T F 14. It is OK when Victims' Rights Groups get involved in the justice

system.

- T F 15. It is my fault that I am in jail.
- T F 16. If I ever hit a woman or child, I had a good reason.
- T F 17. I can understand why people would hate me for the crime(s) I committed.
- T F 18. Being threatened can leave emotional scars even if there was no physical injury.
- T F 19. If someone I care about is upset I usually try to get them to talk about it.
- T F 20. The victim of my (last) offence has completely gotten over it by now.
- T F 21. My getting in trouble with the law has hurt the people I care about.
- T F 22. What I do is nobody else's business.
- T F 23. No matter how angry I was, I could never kill anyone with my bare hands.
- T F 24. Most women learn how to cry just to get attention.
- T F 25. If you cheat on your wife or girlfriend she will not be hurt as long as she does not find out.
- T F 26. It takes a lot of effort to stop thinking about people that were hurt by my crime(s).
- T F 27. It is up to me to control my anger, even if someone gets me angry on purpose.
- T F 28. Crime does not affect society nearly as much as people say it does.

Source: Conroy, Zamble & Brown, unpublished.

Self Report Altruism Scale

Tick the category on the right that conforms to the frequency with which you have carried out the following acts.

	Never	Once	More than once	Often	Very Often
1. I have helped push a stranger's car out of the snow.					
2. I have given directions to a stranger.					
3. I have made change for a stranger.					
4. I have given money to a charity.					
5. I have given money to a stranger who needed it (or asked me for it).					
6. I have donated goods or clothes to a charity.					
7. I have done volunteer work for a charity.					
8. I have donated blood.					
9. I have helped carry a stranger's belongings (books, parcels, etc...)					
10. I have delayed an elevator and held the door open for a stranger.					

11. I have allowed someone to go ahead of me in a lineup. (at Xerox machine, in the Supermarket)					
12. I have given a stranger a lift in my car.					
13. I have pointed out a clerk's error (in the bank, at the supermarket) in undercharging me for an item.					
14. I have let a neighbor whom I didn't know too well borrow an item of some value to me (a dish, tools, etc...).					
15. I have bought "charity" Christmas cards deliberately because I knew it was a good cause.					
16. I have helped a classmate who I did not know that well with a homework assignment when my knowledge was greater than his or hers.					
17. I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.					
18. I have offered to help a handicapped or elderly stranger across the street.					
19. I have offered my seat on a bus or					

train to a stranger who was standing.					
20. I have helped an acquaintance to move households.					

Source: Rushton, Chrisjohn & Fekken (1981)

15. Other people always seem to get the breaks.
16. I can't help getting into arguments when people disagree with me.
17. I am an even-tempered person.
18. If somebody hits me, I hit back.
19. I sometimes feel that people are laughing at me behind my back.
20. Sometimes I fly off the handle for no good reason.
21. At times, I feel I have gotten a raw deal out of life.
22. I know that "friends" talk about me behind my back.
23. When frustrated, I let my irritation show.
24. My friends say that I'm somewhat argumentative.
25. I sometimes feel like a powder keg ready to explode.
26. I tell my friends openly when I disagree with them.
27. When people are especially nice, I wonder what they want.
28. I get into fights a little more than the average person.
29. I am sometimes eaten up with jealousy.

- ___ 18. I have sometimes doubted my ability as a lover.
- ___ 19. It's all right with me if some people happen to dislike me.
- ___ 20. I don't always know the reason why I do the things I do.
- ___ 21. I sometimes tell lies if I have to.
- ___ 22. I never cover up my mistakes.
- ___ 23. There have been occasions when I have taken advantage of someone.
- ___ 24. I never swear.
- ___ 25. I sometimes try to get even rather than forgive and forget.
- ___ 26. I always obey laws, even if I am unlikely to get caught.
- ___ 27. I have said something bad about a friend behind his or her back.
- ___ 28. When I hear people talking privately, I avoid listening.
- ___ 29. I have received too much change from a salesperson without telling him or her.
- ___ 30. I always declare everything at customs.
- ___ 31. When I was young, I sometimes stole things.
- ___ 32. I have never dropped litter on the street.
- ___ 33. I sometimes drive faster than the speed limit.
- ___ 34. I never read sexy books or magazines.
- ___ 35. I have never done things that I don't tell other people about.
- ___ 36. I never take things that do not belong to me.
- ___ 37. I have taken sick-leave from work or school even though I wasn't really sick.

___38. I have never damaged a library book or store merchandise without reporting it.

___39. I have some pretty awful habits.

___40. I don't gossip about other people's business.

Exaggerated Deservingness Scale (XD21)

For each of the following items, please choose a number between 1 and 5, based on the following scale.

1= strongly disagree

2= disagree

3= neither agree nor disagree

4= agree

5= strongly agree

1. I feel as though I ought to be the first person in line. _____
2. I shouldn't have to sit in traffic. _____
3. I have come to expect that any of my efforts should be rewarded. _____
4. I shouldn't be interrupted. _____
5. People shouldn't waste my time. _____
6. It is okay if I don't get what I want. _____ (r)
7. No one has the right to do something that upsets me. _____
8. I shouldn't have to deal with as many problems as other people. _____
9. Something that upsets me is always wrong. _____
10. Generally, I deserve to have all things work out well for me. _____
11. My actions should not be questioned. _____
12. I shouldn't have to deal with other people's failings/imperfections. _____

13. I shouldn't have to "make-do" with anything. _____
14. When I really want something, I can't tolerate when people say "No".

15. It's okay if I lose sometimes. _____ (r)
16. My desires and needs are the most important things in life. _____
17. It's my right to do whatever I want, no matter what. _____
18. If I'm the customer, I expect to be the number 1 priority of the staff. _____
19. I should not be kept from doing what I want. _____
20. Once I get something right, it should stay that way. _____
21. There is no excuse for bad service in a restaurant. _____

note: (r) indicates item is reverse coded.

Childhood and Adolescent Taxon-Self Report

Please answer the following questions by circling the appropriate number or answer, or filling in the blanks.

1. Were you ever arrested before age 16?

Yes No

2. Did you live with both parents until age 16?

Yes No

If you answered no, what was (were) the reason(s) for the separation?
(for example, death of a parent, one parent left, abandonment, removed from home, institutionalization).

Again, if you answered no, were you separated for more than a month?

Yes No

3. Did you get in a lot of physical fights (excluding siblings) before you were 16 years old?

1 2 3 4 5 6 7

no fights

some fights

a lot of fights

4. Please indicate whether or not you engaged in the following behaviors before you were 15 years old (yes or no):

Initiating physical fights (often) _____

Lying often (other than to avoid physical and/or sexual abuse) _____

Running away from home overnight (at least twice, or once without returning)

Stealing (including forgery) _____

Fire-setting (deliberately) _____

Skipping School (often) _____

Breaking into a car, house or building _____

Vandalism (other than fire-setting) _____

Cruel to animals _____

Forcing sexual activity on someone _____

Using a weapon in more than one fight _____

Physically cruel to people _____

5. Did you ever have discipline problems and/or attendance problems (skipping class) at elementary school?

1 2 3 4 5 6 7

no problems

some problems

serious problems

6. Were you ever suspended or expelled from school?

Yes No

7. Have you ever felt that, as a teenager, you had a problem with alcohol (i.e. that your drinking interfered in some way with your life)?

1 2 3 4 5 6 7

no problems

some problems

serious problems

Appendix C: Institutional Coding Form

ID#: _____

Total # of Crimes Committed: _____

Institution: _____

Total # of Violent Crimes: _____

Aggregate Sentence: _____

Number of incarcerations: _____

Sentence Start Date: _____

Number of juvenile incarcerations: _____

Dangerous Offender?: _____

Total # Juvenile convictions: _____

Current Security Level: _____

Total # violent juv convictions: _____

Date of Birth: _____

Age at starting sentence: _____

	No	Previous	Current	Total
Theft	0	1	2	_____
B & E	0	1	2	_____
Robbery	0	1	2	_____
Drug Crimes	0	1	2	_____
Assault	0	1	2	_____
Aggravated assault	0	1	2	_____
Assault w/weapon	0	1	2	_____
Assault Pol.	0	1	2	_____
Murder 1	0	1	2	_____
Murder 2	0	1	2	_____
Manslaughter	0	1	2	_____
Attempted Murder	0	1	2	_____
Weapons	0	1	2	_____
Rape	0	1	2	_____
Sex Assault	0	1	2	_____
Aggressive Sex Ass	0	1	2	_____
Sex Assault w/wea	0	1	2	_____
Indecent Ass.	0	1	2	_____
Child Sex Off.	0	1	2	_____
Driv	0	1	2	_____
Fraud	0	1	2	_____
Kidnap/Conf.	0	1	2	_____
Arson	0	1	2	_____
Release Viols.	0	1	2	_____
Court Viols.	0	1	2	_____
Escape	0	1	2	_____
Threats	0	1	2	_____
Other	0	1	2	_____

Denies crime? _____

Institutional Treatment? _____ Type? _____ Ethnicity: _____

PCL-R Ratings:

Total: _____

Factor 1: _____

Factor 2: _____

- | | | | |
|----------|-----------|-----------|-----------|
| 1. _____ | 6. _____ | 11. _____ | 16. _____ |
| 2. _____ | 7. _____ | 12. _____ | 17. _____ |
| 3. _____ | 8. _____ | 13. _____ | 18. _____ |
| 4. _____ | 9. _____ | 14. _____ | 19. _____ |
| 5. _____ | 10. _____ | 15. _____ | 20. _____ |

Appendix D: Consent Form for Institutional Participants

Personality and Emotion

Consent and Information Form for Institutional Participants

This is a study about personality and emotions. It is being conducted through the Psychology Department at Queens University by myself (Angela Book) and my supervisor (Dr. V.L. Quinsey). A great deal of research has been conducted in the area, but this has not resulted in a clear understanding of the relationship. Your participation in this study will help to contribute to a better understanding.

The attached booklet contains a number of questionnaires dealing with a variety of emotions, attitudes, interpersonal styles, and pro-social/antisocial behaviors. Some of the questionnaires ask about your particular assumptions about the world around you. There are no right or wrong answers to any of the questions/items. We simply ask that you respond sincerely and honestly. Please answer every question, even if some seem irrelevant. Participation will require 45 minutes to 1 hour of your time.

Your signature below shows that you agree to participate in this study. By signing, you are also consenting to have your institutional files reviewed by the principal researcher in order to gather information regarding criminal history, risk assessments and the Psychopathy Checklist Revised score (if available). The file review process will apply to the current research and any follow-up in the future. Your participation in the study is entirely voluntary. You are free to refuse to answer any specific questions that are asked of you. You can withdraw from the study at any time, with no penalty.

Your participation in this study will be confidential. Do not put your name on any of the test materials. Information that you provide will be identified only by an arbitrary assigned number. Scores obtained from your file will only be identified by number.

Please note that none of the information obtained from you will be shared with anyone including institutional staff and whether or not you agree to be a part of the study will have no effect on any decision about you by the CSC.

Your participation is greatly appreciated.

I have read the above statement and freely consent to participate in this research. I have been given an information sheet that describes this particular study and explains the procedure I would follow if I have any concerns or questions.

Signature

Date

Appendix E: Debriefing Sheet for Institutional Participants

This form is intended to give information on participation in a study about personality and emotions.

This research examines the relationship between personality and various emotions, including empathy and anger. It is assumed that there is a relationship between high levels of anger, low levels of empathy, an assumption that the world is a hostile place, and antisocial behaviors. On the other hand, high levels of empathy accompanied by low levels of anger/hostility may result in more pro-social behaviors.

This is an ongoing study. Please do not discuss the study with anyone who has not yet participated. Your cooperation is greatly appreciated.

Thank you for your participation. In the event that you have any complaints, concerns or questions about this research, please feel free to contact me (Angela Book, 533-7203) or my supervisor (Dr. Vern Quinsey, 533-6538). In the event that we cannot address your concerns, you may contact Alistair MacLean, Head of the Department of Psychology, Queens University, at 533-2492.

Appendix F: Consent Form for Community/Undergraduate Participants

Personality and Emotion

Consent and Information Form for Community Participants

This is a study about personality and emotions. It is being conducted through the Psychology Department at Queens University by myself (Angela Book) and my supervisor (Dr. V.L. Quinsey). A great deal of research has been conducted in the area, but this has not resulted in a clear understanding of the relationship. Your participation in this study will help to contribute to a better understanding.

The attached booklet contains a number of questionnaires dealing with a variety of emotions, attitudes, interpersonal styles, and pro-social/antisocial behaviors. Some of the questionnaires ask about your particular assumptions about the world around you. There are no right or wrong answers to any of the questions/items. We simply ask that you respond sincerely and honestly. Please answer every question, even if some seem irrelevant. Participation will require 45 minutes to 1 hour of your time.

Your participation in the study is entirely voluntary. You are free to refuse to answer any specific questions that are asked of you. You can withdraw from the study at any time, with no penalty.

Your participation in this study will be confidential. Do not put your name on any of the test materials. The information you provide will be identified only by an arbitrarily assigned number.

Your participation is greatly appreciated.

I have read the above statement and freely consent to participate in this research. I have been given an information sheet that describes this particular study and explains the procedure I would follow if I have any concerns or questions.

Signature

Date

Appendix G: Debriefing Sheet for Community/Undergraduate Participants
Information Sheet (Community)

This form is intended to give information on participation in a study about personality and emotions.

This research examines the relationship between personality and various emotions, including empathy and anger. It is assumed that there is a relationship between high levels of anger, low levels of empathy, an assumption that the world is a hostile place, and antisocial behaviors. On the other hand, high levels of empathy accompanied by low levels of anger/hostility may result in more pro-social behaviors.

This is an ongoing study. Please do not discuss the study with anyone who has not yet participated. Your cooperation is greatly appreciated.

Thank you for your participation. In the event that you have any complaints, concerns or questions about this research, please feel free to contact me (Angela Book, 533-6552) or my supervisor (Dr. Vern Quinsey, 533-6538). In the event that we cannot address your concerns, you may contact Alistair Maclean, Head of the Department of Psychology, Queens University, at 533-2492.