Social Cognition, Criminal Violence, and Psychopathy

by

Michael D. Bettman

A dissertation submitted to the Department of Psychology
in conformity with the requirements for
the degree of Doctor of Philosophy

Queen's University
Kingston, Ontario, Canada
October, 1998

National Library of Canada

Acquisitions and Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale du Canada

Acquisitions et services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

0-612-35952-2

Canada

Table of Contents

List of Tables

List of Appendices

Abstract

Two hundred and eight Canadian male federal offenders participated in this study of the relationship between social cognition, violent behavior, and psychopathy. Antagonistic recall, hostile attributions, hostile goal selection, and the tendency to generate and prefer aggressive responses were all significantly associated with the intention to respond violently to hypothetical situations. Each stage of the social-information processing model (Crick & Dodge, 1994) and a measure of beliefs supporting violence significantly correlated with self-reported frequencies of violent behavior, the number of violent crimes, and the Hare Psychopathy Checklist - Revised. Multiple regression analyses revealed that each distortion contributed to the prediction of violent responding, even when intelligence, state anger, and response bias were controlled. Antagonistic social cognitions significantly postdicted the frequency of self-reported violence, the total number of violent convictions, and the level of psychopathy.

Acknowledgements

This work is dedicated to Harry Steinberg, my zaida (grandfather), who passed away one month before the completion of this dissertation. His support and self-sacrifice enabled me to pursue my academic goals. His pride in my achievements reinforced my success. He provided me with principles that have served me well and will continue to guide me in the future.

Batia and Fred Bettman have always given me their love, support, and confidence. Through all the good times and all the bad times, my parents have always been with me. They are truly a part of me. Thank you for teaching me the value of education.

Good fortune provided me with loving and nurturing relatives, but luck had nothing to do with my pursuance of a beautiful, bright, and supportive partner. Although Raphaela tolerated a lot of "thesis work" in the last few years, she gave me the encouragement and space that I needed to get this job done. I only hope that I can return the favor as it is now her turn to go to graduate school.

Sonya, my beautiful five-year old daughter, actively contributed to this project. Her separation of "pens that work" and "pens that don't work" allowed me to devote more time to this thesis and less time to playing with her Barbie dolls. As a result I could always find pens that worked and now I have more time to play with dolls.

The person who aided me the most on this project was my supervisor, Dr. Edward Zamble. His guidance, wisdom, and experience shaped this investigation from the beginning. More importantly, his enthusiasm for forensic research and his quest for answering the questions raised in this study encouraged me during difficult times. I look forward to future collaborations with Dr. Zamble.

Dr. Vern Quinsey and Dr. Wendy Craig, members of the dissertation supervisory committee, provided me with the challenges, questions and editorial comments to enlarge the scope of this inquiry. Their knowledge and expertise was very much appreciated.

I would also like to thank my colleagues at the Correctional Service of Canada for supporting my educational leave and recognizing the potential applications of this research. I would specifically like to express my gratitude to Reyhan Yazar, Robert Rowe, Maj. Anthony Jean, Dr. Ralph Serin, Yvonne Latta, Ross Toller, Julia Hobson, and Cathy Gainer. I would also like to give a heartfelt thanks to Nancy Remington and Michelle Farrel, two research assistants who helped me collect data.

SOCIAL COGNITION, CRIMINAL VIOLENCE, AND PSYCHOPATHY

Violent crime is a significant public health problem in North America. One method of addressing this problem is to assess individuals who perpetrate violent crimes and to determine relevant approaches to the prevention and management of future violence. Recent reviews of the assessment and treatment of violent offenders suggest that modifying the social cognitions of violent offenders is a promising treatment approach (Andrews & Bonta, 1994; Blackburn, 1993).

When faced with similar social situations, why do some people react with violence, whereas others withdraw or negotiate? Individual reactions can vary for the same person across different situations and may vary for different people within similar situations. Social learning theory proposes that violent behavior, like most other behaviors, is determined by a combination of stable behavioral dispositions interacting with specific features of the environment. In order to understand a violent act, a number of interacting variables need to be considered. The variables include innate and acquired behavior propensities,

neurophysiological characteristics, cognitive functioning, and aspects of the immediate situation.

The emphasis on cognitive mediation separates social learning theory from other behavioral theory. The basic assumption of this form of cognitive-behavioral theory is that thoughts, attitudes, and beliefs influence the way people feel and behave. Aggression is acquired and maintained internally, through environmental rewards and self-reinforcement. It is instigated in response to the cognitive appraisal of the environment. The theories of Bandura (1983), Berkowitz (1983), and Zillmann (1983), stipulate that aggressive behavior is a cognitively mediated process. A central component of this mental process involves the processing of social information.

Huesmann (1988) has proposed that social information processing is a core determinant of aggressive behavior. Social information processing is a term used to describe the encoding, interpretation and response to environmental social cues. Social information processing models articulate the sequential and interrelated stages through which social data is perceived and interpreted. A prominent assumption of social cognitive theories of aggression is that individuals differ in the way they process information about their social environment. It is assumed that those who respond

violently to social situations display particular social cognitive distortions. In a review of developmental psychopathology and cognition, Kendall and Macdonald (1993) identified 50 studies that demonstrate a relationship between aggression and social-cognitive difficulties. The assumption underlying these investigations is that an interaction of situational and personal factors produces aggressive behavior. Persistently aggressive behavior is the result of stable deficiencies in the appraisal of social information.

Social Information Processing Model

The social cognitive theory of aggression is based primarily on research examining the social information processing styles of aggressive children. Kenneth Dodge and his colleagues (Dodge, 1986; Dodge, Petit, McClaskey, & Brown, 1986) pioneered the development of a social information-processing model of aggressive behavior. Dodge (1980) was initially concerned about how aggressive children misattribute hostile intentions and eventually this investigation broadened into a model of childhood social competence.

Crick and Dodge (1994) have formulated a model of social cognition and performance that attempts to delineate the cognitive features of social competence. A primary

assumption of the model is that effective behavior depends on rational and objective perceptions of social circumstances. The socially competent person is capable of accurately perceiving and appraising his or her social environment by attending and responding to information that is socially relevant. Conversely, behavioral problems are the result of deficits and distortions of this process. These deficiencies in the processing of social information are assumed to play a central role in the development of conduct problems, depression, and social rejection.

The model of social adjustment is an integration of several cognitive approaches, including social problem solving (D'Zurilla & Goldfried, 1971), social information processing (McFall, 1982), and schema theory (Shank & Abelson, 1977). The addition of the notion of schematic processing accounts for the stability of social dysfunction. Schemas represent a system of social knowledge, recalled from memories of previous social experience. This social knowledge assists in the interpretation of events and guides behavior. In the model of social information processing, generalized experiences and self-schemas (Dodge & Tomlin, 1987) are thought to influence social cognitions at every processing stage.

Crick and Dodge (1994) maintain that each phase of social information processing depends on earlier stages and interacts with social schemas. They base this assertion on neuropsychological and cognitive explanations of attention, emotion and mental processing. The model is rooted on a connectionist theory of cognitive functioning. Connectionism indicates that cognitive processing is not a rigid linear sequence, but a set of simultaneous operations (Rumelhart, McClelland, & Parallel Distributed Processing (PDP) Research Group, 1986). Synchronous processing is hypothesized to follow an analytical progression with interrelated feedback loops at each stage. The relationship of processing components at one stage and processing at another stage is interactive. This model of children's social adjustment is depicted in Figure 1.

Crick and Dodge (1994) delineate six stages of social cognitive processing. The first stage (encoding of cues) involves the perception of and attention to internal and external information. The second stage (interpretation of cues) encompasses the subjective definition of those cues. Two primary components of the interpretive process are the attributions of causality and intentions towards others. The third stage is a motivational process where immediate social goals are considered. The fourth stage is the response

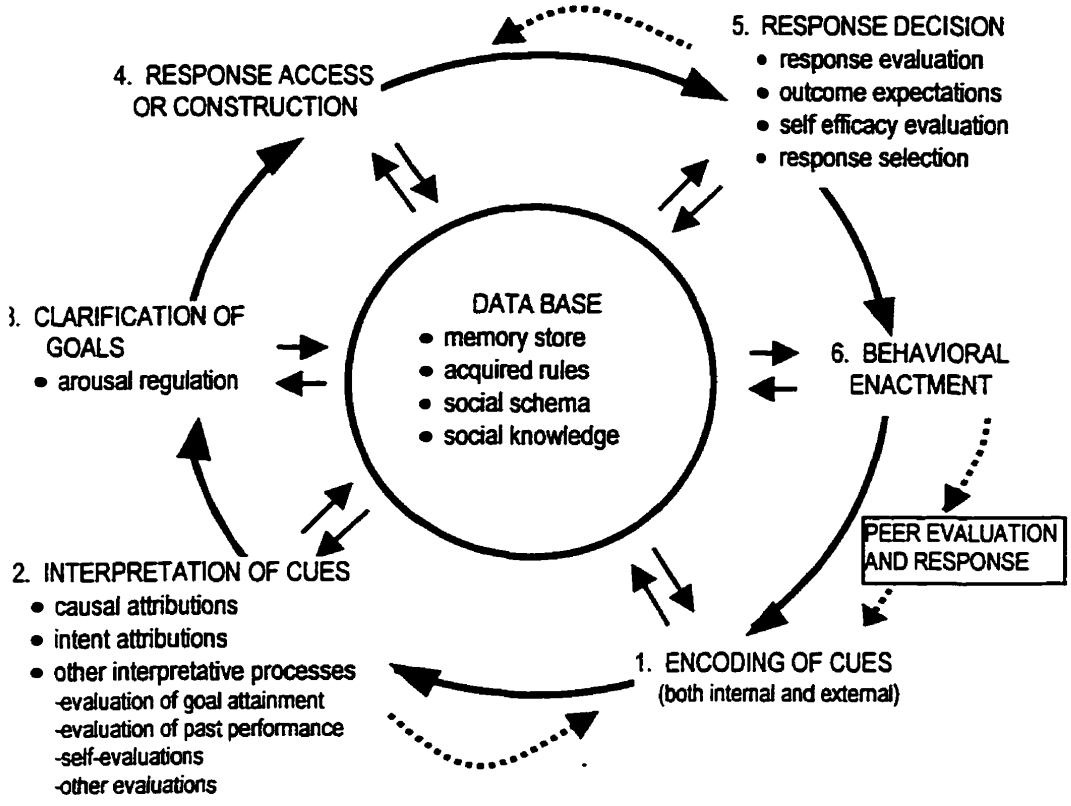


Figure 1. A reformulated social information-processing model of children's social adjustment.

Note: From "A review and reformulation of social information-processing mechanisms in children's social adjustment" by N.R. Crick and K.A. Dodge, 1994, Psychological Bulletin 115, p.76.

access or construction phase, where potential behavioral options are produced. In the fifth stage, the response decision phase, solutions are evaluated and selected. The response that is selected is implemented in the final stage, the behavioral enactment stage. All of the information-processing stages depend on the appraised impact of the response. Feedback from peers and the environment can initiate the process.

Social Cognition and Aggression

The application of social information-processing theory to aggressive behavior is based on abundant empirical findings that aggressive children demonstrate consistent deficits and distortions in their resolution of social problems (see Akhtar & Bradley, 1991 for a detailed review).

When faced with interpersonal problems, chronically aggressive children display processing biases and social cognitive deficits at every stage of the social information processing model (Dodge, 1993). Developmental research has demonstrated that aggressive children, when compared to non-aggressive children, misinterpret social information, attribute hostility, select punitive goals, generate aggressive responses and exhibit a preference for aggressive solutions.

Encoding of cues

In order to successfully interact with others, or solve social dilemmas, it is important to realistically perceive and define social information. In a series of experiments, Dodge and his colleagues explained how aggressive children tend to misperceive their circumstances by selectively attending to irrelevant information and by focusing on threatening environmental cues (Dodge & Tomlin, 1987, Dodge & Frame, 1982, Dodge & Newman, 1981, Gouze, 1987; Lochman & Dodge, 1994; Lochman, Lampron, & Rabiner, 1989).

Dodge and Newman (1981) approached the measurement of encoding bias in a creative way. They developed a "detective game" for boys rated as either popular or aggressive by peers and teachers. The objective of the game was to determine if the antagonist in a situation acted with hostility. The participants of the game were allowed to request up to five pieces of information to arrive at this decision. The boys rated as aggressive requested less information and attributed more hostile intentions.

Dodge and Newman observed a developmental progression in cue encoding. Younger boys requested less information and older aggressive boys seemed to posses a developmental lag (responding as younger boys would). Based on an assumption that people are more likely to recall the information they

encode, Dodge and Newman also discovered that aggressive boys were more likely to recall hostile information. A similar experiment replicated this finding and demonstrated that the results were not solely due to the general intelligence of the subjects (Milich & Dodge, 1984)

Other researchers have observed similar attention deficits. Gouze (1987) established that aggressive preschool boys (rated aggressive using observational measures and teacher ratings), were more distracted by an aggressive cartoon when completing a separate task and took a longer period of time to shift their attention away from a violent puppet show. May (1986) found that sensitivity to violent tachistoscopic stimuli was associated with self-reported violent behavior. This correlation was irrespective of age, intellectual ability, economic status and state arousal.

Interpretation of cues

Accurate definitions of social situations not only depend on the perception of the environment, but on the meaning assigned to those perceptions. Social cognitive researchers have repeatedly ascertained differences in the attributions of aggressive and non-aggressive children (Bickett, Milich, & Brown, 1996; Dodge, 1980; Dodge & Newman, 1981; Guerra & Slaby, 1989; Lochman & Dodge, 1994; Nasby, Hayden & Depaulo, 1980; Waas, 1988). These studies

have found that aggressive children have a propensity to infer hostile intentions, particularly in ambiguous interpersonal situations (Dodge, 1980). This inclination has been labeled a "hostile attributional bias".

Dodge and Frame (1982) determined that the selective attention to hostile cues, a process that is thought to occur in the encoding stage, partially accounts for the attributional bias. Many researchers who have uncovered this bias maintain that hostile attributions and negative interpretations are central determinants of aggressive responding. Dodge and his colleagues (Dodge & Frame, 1982; Dodge et al., 1986) have demonstrated that an attribution bias is directly related to the decision to retaliate with aggression.

In an early experiment, Dodge (1980) used the hypothetical destruction of a puzzle by a peer to provoke a behavioral response from a group of boys (rated aggressive or non-aggressive by peers and teachers). The destruction of the puzzle was presented as occurring under three separate circumstances. In each condition, information was provided to suggest that the intentions of the peer were benign, ambiguous, or hostile. Under hostile and benign conditions aggressive and non-aggressive boys responded similarly. Under ambiguous conditions, the boys rated as aggressive

were more likely to respond aggressively, whereas the boys rated non-aggressive were more likely to act as they did when circumstances were benign. A follow-up study determined that aggressive children assigned hostile intent to the ambiguous circumstance (Dodge 1980, Study 2). Dodge and Newman (1981) found that this misattribution occurs even when aggressive children are presented with information that the intentions of a peer are harmless.

The interpretation bias of aggressive children is robust and has been replicated in numerous studies with children of different ages (Dodge, 1980; Dodge & Frame, 1982; Dodge et al., 1986; Dodge & Tomlin, 1987; Feldman & Dodge, 1987; Guerra & Slaby, 1989; Quiggle, Garber, Panak, & Dodge, 1992; Sancilio, Plumert & Hartup, 1989; Waas, 1988). A hostile attributional bias is also apparent in studies of aggressive adolescents (Dodge & Coie, 1987; Crick & Dodge, 1992; Dodge et al., 1990; Fondacaro & Heller, 1990; Guerra & Slaby, 1989; Hains, & Herrman, 1989). It is also characteristic of aggressive girls as well as boys (Dodge, Murphy, & Buchsbaum, 1984; Dodge & Tomlin, 1987; Feldman & Dodge, 1987; Steinberg & Dodge, 1983). The finding of a hostile attributional bias is not limited to hypothetical situations. Researchers have confirmed this tendency in

real-life situations (Hughes, Robinson, & Moore, 1991; Steinberg & Dodge, 1983).

Clarification of goals

Once information about the environment has been perceived and interpreted, the next step in the model is the adoption of a behavioral objective. Crick and Dodge (1994) define goal clarification as "focused arousal states that function as orientations towards producing (or wanting to produce) particular outcomes" (pp. 87). The typical method of assessing behavioral intent involves presenting subjects with a list of possible goals and asking them to select their preference. In the application to aggressive behavior, research has demonstrated that aggressive children and adolescents have a tendency to select punitive, retaliatory, and hostile goals (Crick & Dodge, 1992; Lochman & Dodge, 1994; Slaby & Guerra; 1988). Alternatively, children rated as popular or prosocial tend to select goals that are positive and helpful.

Social cognitive deficiencies have also been implicated in the inability of aggressive children to integrate and respond to social information. Aggressive behavior in children in diverse social situations has been linked to a lack of ability to generate sufficient or appropriate responses to social situations (Asarnow &

Callan, 1985; Richard & Dodge, 1982). Research that has examined the interpersonal problem solving characteristics of children has found that aggressive children generate fewer solutions to hypothetical dilemmas in comparison to nonaggressive children (Asarnow & Callan, 1985; Richard & Dodge, 1982; Spivack & Shure, 1974: Spivak, Platt, & Shure, 1976; Guerra & Slaby, 1989). One investigator (Deluty, 1983) failed to distinguish aggressive and non-aggressive children according to the frequency of responses. Deluty suggested that the content and priority assigned to solutions is more important than the quantity.

Response access or construction

The relative priority of solutions and the quality of those solutions have received considerable attention. Aggressive children have a tendency to generate aggressive solutions to problems (Gouze, 1987; Lochman & Lampron, 1986, Lochman, Lampron, & Rabiner, 1989), and usually access this type of response before more effective prosocial solutions (Lochman, 1985; Richard & Dodge, 1982). Similarly, researchers have found that within the set of possible solutions, aggressive children produce a relatively small number of relevant solutions (Richard & Dodge, 1982; Guerra & Slaby, 1989).

Response decision

Aggressive children may also consciously select aggressive responses. Even when a variety of solutions are presented along with a hypothetical problem, aggressive children have a tendency to evaluate aggressive responses more favourably (Crick & Ladd, 1990, Deluty, 1983, Quiggle, Garber, Panak, & Dodge, 1992). Aggressive children have also been found to expect more positive outcomes for aggressive behavior (Dodge, Petit, McClaskey & Brown, 1986; Feldman & Dodge, 1987; Hart, Ladd, & Buurelson, 1990).

Self-evaluation is thought to exert an important influence in response decisions. Aggressive children tend to rate themselves as more capable of performing aggressive behaviors and less capable of prosocial behaviors (Crick & Dodge, 1989, Quiggle et. al, 1992). Crick and Dodge (1994) associate this appraisal of competency with the construct of self-efficacy (Bandura, 1977). They suggest that aggressive responses are preferred because aggressive children are confident that they can perform these solutions, and are less confident that prosocial solutions will be performed successfully.

Social schema

As mentioned earlier, the model proposed by Crick and Dodge (1994) specifies a central role for schematic

processing. Responding to the demands of a situation is not solely the product of immediate situation-based cognitions; it also encompasses an adherence to a generalized style. Crick and Dodge (1994) propose that " a mental representation of past events is stored in long-term memory. Later, this memory is integrated with other memories into a general mental structure that guides the processing of future social cues" (p. 78).

Crick and Dodge admit that there is little empirical evidence to support the prominent role of social schemas in aggressive behavior. However they do suggest that the failure of aggressive children to attend to relevant cues may be due to the interference of a well-rehearsed script for aggression. In this respect, aggressive responses are the product of a schema that is overlearned and misapplied to specific situations. The authors provide an example of a play fight that escalates into a serious conflict, because of a schema that is inappropriately applied to the situation.

Empirical support for the existence of aggressive schemas can be found in the beliefs commonly held by those who are aggressive (Bergstein, Hemenway, Kennedy, Quaday, & Ander, 1996; Cotten, Resnick, Browne, Martin, McCarraher, & Woods, 1994; Perry, Perry, & Rasmussen, 1986; Spaccarelli,

Coatsworth, & Bowden, 1995). Slaby and Guerra (1988) demonstrated that the endorsement of violent beliefs mediated violent response preferences to hypothetical situations. A study of an ethnically diverse sample of disadvantaged children found that beliefs supporting aggression contributed to longitudinal and coexistent predictions of aggressive behavior (Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995).

The general findings suggest that aggressive children are more likely to attend to hostile and less relevant social information (stage 1). They demonstrate a pronounced bias to attribute hostility (stage 2) and pursue antagonistic social goals (stage 3). Aggressive children also generate fewer and less effective solutions for social problems (stage 4); and they select aggressive solutions and evaluate those solutions as effective (stage 5). These stages are interdependent and contribute to the aggressive child's inappropriate social behaviors (stage 6). At the core of these social cognitions a general schema supporting the use of aggression is thought to exert an influential role.

Gaps In Knowledge

Two decades of developmental research demonstrates that aggressive children differ in the way they perceive and interpret environmental cues, generate and select solutions to social problems, and in the attitudes and beliefs that they hold about aggression. However, the majority of studies demonstrating empirical evidence of an association between social cognition and aggression are based on juvenile populations. Few studies have explored comparable social processing styles of aggressive adults.

Aggressive behavior has been found to be an enduring characteristic. Longitudinal studies have determined that an individual's relative ranking on aggression is consistent throughout the lifespan (Olweus, 1984). Peer nominations of childhood aggression are significantly correlated with self-reported and spouse-reported aggression in adulthood (Huesmann, Eron, Lefkowitz, & Walder, 1984). Farrington (1989) has demonstrated that teacher rankings of aggression in childhood are predictive of adult criminal offenses.

Therefore, longitudinal studies would suggest that the social cognitive indicators of childhood aggression carry forward into adulthood. However, as Blackburn (1994) correctly points out, longitudinal predictors have a high false positive rate. Most aggressive children do not become

violent adults. Loeber and Stouthamer-Loeber (1998) argue that the stability of aggression over time is misleading because most aggressive children do not grow up to be violent. They also point out that adult criminal violence does not necessarily have a developmental determinant.

Some developmental researchers have used longitudinal methods to explore social cognitive deficits from childhood to adolescence. Antagonistic social information processing styles are not exclusive to young aggressive children. Researchers have demonstrated that aggressive adolescents process social information in a way that is consistent with the distortions of the aggressive children (Dodge et al., 1990; Fondacaro & Heller, 1990; Hains & Herrman, 1989; Slaby & Guerra, 1988). In one study of an incarcerated sample, antisocial aggressive adolescents, when compared to non-aggressive adolescents, were more likely to define social problems in a hostile way, adopt hostile goals, generate fewer solutions and anticipate fewer sanctions for aggression (Slaby & Guerra, 1988). Persistent and serious forms of aggression were associated with less effective social problem-solving skills and more frequent endorsement of beliefs that support the use of aggression.

In this context, it is plausible that the same cognitive deficits and distortions that mediate aggression

in childhood carry over to adolescence and may also extend into adulthood. However, only a few studies have empirically tested the association between social cognitive distortions and violence in adults.

Holtzworth-Munroe (1996) has proposed that a social information-processing framework would be helpful for the assessment and treatment of spouse abusers. In a study comparing the reactions of husbands to statements written by their wives, violent men were more likely to experience anger and report negative behavioral intentions (Holtzworth-Munroe, & Smutzler, 1996). Compared to nonviolent men, domestically violent men are more likely to respond with irrelevant solutions, verbal aggression, and physical aggression to videotaped scenes of a couple in conflict (Dutton & Browning, 1988).

A few studies have examined the social cognitive deficits of persistently violent criminal offenders. Copello and Tata (1990) examined the social information processing differences of violent offenders, non-violent offenders, and non-offenders. In comparison to non-offenders, both violent and non-violent offenders were more likely to infer violent threats to ambiguous sentences. The results suggest that the attribution of violent intent may be related to general deviance and not specifically to violent behavior.

Zamble and Porporino (1988) demonstrated that poor coping and ineffective problem solving was characteristic of criminal offenders, though the authors did not distinguish between violent and non-violent offenders. In a previous study with a population of incarcerated offenders, I (Bettman, 1993) found that an adherence to an aggressive problem-solving style significantly contributed to the postdiction of self-reported violence. The measure used in this previous study was based on the social cognitive deficits and distortions described in the developmental research.

Research with Canadian criminal offenders has discovered a significant correlation between preferences for violent scenes in a binocular rivalry tasks and ratings of violent criminal behavior (Seager, 1996). This suggests that adults with a history of violent behavior selectively attend to hostile cues. The same study found that measures of lifestyle impulsivity, aggressive responses to hypothetical vignettes, and a preference for attending to scenes depicting weapons, accounted for a significant amount of variation in the frequency of violent criminal convictions and measures of psychopathy.

Psychopathy and Violence

The construct of psychopathy is relevant to the issue of violence and social cognition. Psychopathy is a personality trait that has been described in detail by Cleckley (1976) and researched and operationalised by Hare (1991). By definition, psychopaths have poor behavioral controls, are irresponsible, impulsive, and lack empathy and remorse. Typically those scoring high on measures of psychopathy have long criminal careers that are marked by childhood conduct problems, juvenile delinquency, and diverse adult criminal offenses.

Offenders scoring high on measures of psychopathy have a higher rate of violent criminal activity. Hare and McPherson (1984) demonstrated that a sample of psychopaths had a significantly greater history of violent convictions in comparison to non-psychopathic criminals. Wong (1984) found that ratings of violent institutional offenses were associated with measures of psychopathy. Psychopathy is widely recognized as a valid predictor of violent recidivism (Harris, Rice, & Cormier, 1991; Hart, Kropp, & Hare, 1988; Serin, Peters, & Barbaree, 1990).

Hare (1991) attributes this violent history to a hostile and self-centered view of the world. The social cognitions of psychopaths are consistent with the

distortions of aggressive children. Serin (1988) found that the Psychopathy Checklist scores of criminal offenders significantly correlated with hostile attributions to a series of vignettes. Blackburn and Lee-Evans (1985) suggest that psychopaths are quick to interpret provocation, anticipate aggressive outcomes to problem situations, and demonstrate "an attributional bias towards perceiving malevolent intent" (p. 93). The authors concluded that this attributional bias is a core feature of psychopathy.

In summary, few studies have applied social information processing theory to violent criminal behavior in adults, but there are studies that suggest a temporal stability of aggression. The finding that rankings of aggression are relatively stable throughout the lifespan has directed experimenters to evaluate the association between social cognitions and aggression in adolescents. These investigations have found a consistent relationship between serious criminal violence and the social beliefs and cognitive styles of aggressive adolescents. Though a small number of studies have investigated the relationship between social information processing and adult aggression, some studies demonstrate that psychopathy, a personality construct that is correlated with early onset of criminal

behavior as well as violence, is also associated with social cognitive deficits.

Aim of the Current Study

The primary aim of this study was to systematically examine the sequential stages of social information processing in a sample of adult criminal offenders. The systematic examination included multiple measures of social information processing and violent behavior. Specifically, it was expected that measures of social information processing distortions would be significantly interrelated. It was further predicted that measures of antagonistic social cognitions would correlate with measures of violent behavior. The measures of violent behaviors of primary interest in this study were self-reported history of violence, and violent criminal convictions. In addition, measures of antagonistic social cognitions and violent behavior were expected to correlate with a measure of psychopathy.

In the application of a model of social information processing to violent behavior, it is relevant to consider the association of characteristic schemas of social information processing with previous experiences. Measures relating to social schemas were expected to correlate with cognitive distortions, violent behavior, and psychopathy. In

the current study, a measure of beliefs supportive of violence was used to test this relationship.

It was expected that social information processing distortions and violent beliefs would account for a significant proportion of variance in the intention to respond violently to hypothetical situations. Social processing distortions, in combination, were expected to account for a significant amount of the variation in violent social behavior and measures of psychopathy. It was anticipated that violent responding to hypothetical vignettes could be predicted by social distortions representing each stage of the social information-processing model. Specifically, hostile recall of social cues, hostile attributions of intent, selection of hostile goals, a tendency to construct hostile responses, and a positive evaluation of violent responses, were each expected to contribute to the prediction of a violent response.

Most of the studies of childhood aggression mentioned earlier depend on categorical classification of aggression. Children are classified categorically as aggressive or non-aggressive, most often by teacher and peer ratings of aggression. Categorical measures can result in grouping individuals with varying frequencies of aggressive behavior into the same classification. Measuring violence by the

frequency of occurrence prevents this arbitrary categorization for individuals who are marginally or rarely aggressive. Therefore, this study is concerned with the frequency of violent behavior. It was not expected that an adult offender who had committed only one violent crime would evince biases or deficits of information processing. The approach of this study was to conceptualize violence as a continuous variable, as measured by the frequency of self-reported acts of violence and officially documented criminal convictions for violent crimes. It was expected that each stage of antagonistic social cognition would add incremental validity to the postdiction of self-reported violence and officially recorded crimes of violence.

A second objective of this study was to connect social cognitive distortions to psychopathy. It is plausible that an antagonistic social cognitive style is a salient feature of the personality construct of psychopathy. If psychopathy and cognitive processing are interrelated and both are associated with violent behavior, then it is important to disentangle the complexity of this interaction. Sets of regression equations were utilized to determine if the postdiction of violent behavior by measures of social cognition remains valid when psychopathy is controlled.

Competing Explanations

This study examined the social-information processing styles of adult offenders while appraising three alternative explanations. One alternate explanation is that social-cognitive deficits are not associated directly with violence, but that both are influenced by a common underlying factor. In a review of the social information processing deficits of aggressive children, Akhtar and Bradley (1991) noted that most investigations failed to control for underlying variables that could potentially influence aggression and social cognition. Akhtar and Bradley identified general intellectual ability as a possible influence. It is possible that social information-processing distortions occur as a result of a general cognitive deficiency.

Some of the developmental studies mentioned earlier have demonstrated that the social cognitive variations between aggressive and nonaggressive children were not explained by intellectual differences (Dodge et al., 1990; Gouze, 1987; Milich & Dodge, 1984). However, although the processing deficits associated with aggressive children are assumed to be a specific problem of social information processing, intellectual deficits have been associated with violent behavior in children and adults. Huesmann, Eron and

Yarmel (1987) demonstrated that intelligence measured at age 8 was inversely associated with measures of peer rated aggression. The authors implied that intellectual deficits are influential to the early development of aggressive behaviors by preventing the development of alternative behaviors. They concluded that intelligence exerts a less significant influence in adulthood.

It is possible that a more generalized inability to process information accounts for the relationship between processing components and aggressive behavior. The current study examined the influence of intelligence in the relationship between social information processing and violence. Because developmental studies have demonstrated an insignificant influence of intelligence on social cognitions, it was not expected that intelligence would play an influential role in a sample of adults.

A second possibility is that violent responses to situations are primarily mood dependent and not situation dependent. It is possible that individuals who respond aggressively to social situations are emotionally aroused before they are exposed to the situation. The emotional arousal may be independent of the particular social situation and the cognitive appraisal is influenced by mood.

Berkowitz (1983) suggests that emotional arousal is a primary determinant of aggressive behavior. Berkowitz maintains that cognitive attributions assume a secondary influence once the person is aroused. Research that examines the dysfunctional attitudes of depressed individuals demonstrates a significant influence of mood on the endorsement of beliefs (Miranda, Persons, & Nix Byers; 1990). The authors of this study found that dysfunctional beliefs acted as a vulnerability factor for depression but that the endorsement of dysfunctional beliefs depended on current mood.

In the application to aggressive schemas, this research suggests that cognitive appraisals and the endorsement of violent beliefs may be influenced by current mood as opposed to social knowledge and experience. In the present study, a measure of emotional arousal (state anger) was administered with social cognitive measures to assess the influence of participants' general mood at the time of testing. It was not expected that the current mood of the participant would be associated with antagonistic social cognitions or the endorsement of violent beliefs.

A third and final alternative explanation is the possibility that response style plays a role in the assessment of information processing. Possible response

biases include the desire to make a good impression and a lack of self-awareness. For example, it is possible that respondents interpret and consider violent responses, but are reluctant to admit this when questioned by researchers. Response bias is another potential influence on the generation of responses to hypothetical vignettes and the self-reporting of violent criminal history. In this study, a measure of response bias was used to assess this potential influence.

Thus, the current study attempted to demonstrate that the associations between social cognitive distortions, violent responses to vignettes, and violent behavioral history, are not accounted for by intelligence, the current mood of the participant, or response bias.

Method

Participants

Two hundred and eight adult male offenders participated in this study. Initially 289 potential participants were recruited to participate in this study. Of those, 243 presented themselves for an initial interview. The reasons that the offenders did not appear are varied. From knowledge of institutional practices one can say that they may have had conflicting appointments. It is however, impossible to estimate how many failed to appear because they did not wish to participate. Of the 243 offenders who arrived for the interview and had the study explained to them, 26 declined to participate. Two individuals participated in the study, but after receiving legal opinion requested to withdraw, and their responses were destroyed. Nine participants were interrupted during the study and efforts to have them return later were unsuccessful. Six participants were disqualified from the study because their English was poor and they failed to comprehend the interview questions. Thus, data were available for 208 subjects.

Characteristics of the Participants

The ages of the participants ranged from 19 years to 62 years. The mean age was 33.9 years (SD = 9 years). Eighty-two participants (39.4%) had a grade twelve education or higher. Ninety-two (44.2%) had a grade 10 education or lower. One hundred and sixty seven (80.3%) participants were Canadian citizens. Eighty-three (39.9%) participants were single, 31 (14.9%) were married, and 69 (33.2%) were involved in common-law relationships. The remaining 25 (12%) were separated, divorced, or widowed.

The length of sentences ranged from 730 days to life imprisonment. In Canada the penalty for first and second degree murder is life imprisonment. Twenty-five participants were serving a life sentence. The average sentence length of those not serving a life sentence was 2,491 days. The longest sentence that was not a life sentence was approximately 45 years.

One hundred and sixty eight participants (80.8%) were serving their first federal term of imprisonment. Thirty (14.4%) were serving their second federal term, and the remaining nine (4.8%) had served at least three federal terms of incarceration.

On average, the total number of convictions for prior and current crimes was 17.5 (SD = 15.6). The number of

convictions ranged from 1 to 111. Eighty (38.5%) participants had no current or prior convictions for a violent offence. Forty (19.2%) had a conviction for one violent offence. The remaining 88 (41.3%) had at least two convictions for violent offences. The average number of violent convictions was 2.18; this ranged from 0 to 13 convictions.

Setting of the Current Study

In an effort to maximize the chances of recruiting a representative sample of violent and non-violent offenders, the study was conducted at both a medium-security and a minimum-security federal institution. The medium-security institution was Collins Bay Institution and the minimum-security institution was Frontenac Institution. Both institutions are located in Kingston, Ontario. In the Canadian correctional system, medium-security institutions are structured environments designed to incarcerate inmates who pose a risk to the safety of the community. This level of security is particularly evident in the physical structure of Collins Bay, an institution that is surrounded by tall stone walls, barbed wire, and four guard towers. Frontenac Institution is located adjacent to Collins Bay and lacks imposing security features. Although there are exceptions, most of the offenders in Frontenac Institution

have been rated as presenting a low to moderate risk for repeat offending. These criterions indicate that medium-security institutions incarcerate more violent offenders than minimum-security institutions.

In the current study, 121 participants (58.2% of the total) were incarcerated at Collins Bay Institution (medium-security) and 87 (41.8%) participants were incarcerated at Frontenac Institution (minimum-security). At the time of the study, Collins Bay Institution had a total population of 563 offenders, and Frontenac Institution had a population of approximately 250.

Measures

Measures Of Information Processing

Social Problem Interview

To assess each stage of the social information-processing model, the Social Problem Interview was developed for this study. This is a structured interview involving the oral presentation of four hypothetical social vignettes. For each, the respondent is asked questions to measure his reaction. Each question was designed to measure a particular construct of the social information-processing model. The Social Problem Interview is presented in Appendix A, along with the scoring sheet summarizing the variable labels and scoring method (Appendix B).

The vignettes presented in the interview were developed to represent realistic social situations that are ambiguous with respect to the intentions of the antagonist. The fictitious events were derived from data collected by Zamble and Porporino (1988), for their study of the coping styles of a similar population. As a part of that study, Zamble and Porporino (1988) asked offenders about the type of problems they encountered in the community. The situations chosen for this study vary according to the familiarity of the antagonist (the actor described in the vignette), the sex of the antagonist, and the social context of the situation.

The style of questioning is derived from the Interpersonal Negotiation Strategies model proposed by Yeates, Schultz and Selman (1990). Functionally, the sequential steps of this model are similar to those proposed by social information processing theorists (Dodge et. al, 1986) and social problem-solving theorists (Spivack & Shure, 1985).

Following the oral presentation of the general situation, the respondent was asked 16 open-ended questions, and then 8 fixed-choice questions. Open-ended questions were used to prevent the respondent from answering in a predetermined or set manner. Research has demonstrated that

the methods used to elicit social cognitions influence the response, for example, open-ended questions are more likely to elicit an aggressive response than questions that constrain the response (Costanzo, Grumet, & Brehm, 1974).

All open-ended responses were scored using the method described in Appendix B. The 8 fixed-choice questions provide an additional method of measurement. The respondents were given a sheet of paper with written questions and instructed to score their responses to each question on a 5-point Likert scale. The advantage of the participant appraisal is that scoring and interpretation by an additional person is not required.

The first stage of the model is the encoding of situational cues. This stage was assessed with questions regarding the participant's desire for more information about the situation (Information Request; "Do you want any more information about the situation?" and "If so, what else?"). Another component of situation encoding ranks the degree of emotional arousal and responsiveness. Respondents were asked to appraise their level of anger (Anger Appraisal; "If this situation happened to you, how angry would you feel?") and their ability to reflect before responding (Impulsivity Appraisal; "How likely would you be to stop and think about what to do before you did

something?"). A third set of encoding measures assesses the respondent's recollection of situational cues. Following the presentation of all four hypothetical situations, two open-ended questions were asked about the first situation (Situation Recall; "What do you remember about situation one?" and Antagonist Recall; "What do you remember about the person in situation one?"). Higher scores indicate hostile and antagonistic recollections of the situation.

The second stage of the social information-processing model involves the interpretation of situational cues. This stage was assessed by asking the respondent open-ended questions about the cause of the situation ("What is the problem in this situation?"). Causal attribution is scored if the respondent blames the antagonist for the cause of the problem. Positive Definition is scored if the respondent attributes the problem to a misunderstanding, accident or mutual determinant. Hostile intention is determined by asking the respondent an open-ended question about the antagonist's aim ("Why do you think the other person acted this way?"). Hostile Attribution is scored when the aim of the antagonist was thought to be deliberate. "Neutral Attribution" is scored if the actions are ascribed to accidental or ambiguous motives. Hostile intention is also ranked by the respondent's appraisal on a fixed 5-point

scale (Provocation Appraisal; "Do you think the other person acted deliberately to upset you?"). Higher scores indicate a deliberate attempt to provoke.

The clarification of goals is the third stage of the social information-processing model. Respondents were asked directly "If you had to deal with this situation what would be your goal?" "Hostile Goal" is scored if the stated objective is to punish, harm, or intimidate the antagonist. "Positive Goal" is scored if the respondent attempts to negotiate or communicate in a prosocial manner.

In the fourth stage of the social information-processing model, responses to the situation are generated. This stage is called the response construction or access stage and in the Social Problem Interview it is assessed in four ways. "Response Quantity" is determined by summing the total number of responses to the 5 response-eliciting questions (First Response; "If this situation happened to you, what is the first thing you would do?", Second Response; "What if the other person turns to you and smiles, what would you do?" and "What else could you do?").

The responses are categorically scored to indicate a violent response. A "Violent Response" is not a physical act of aggression towards the interviewer. In this study, a "Violent Response" refers to the stated intention of the

respondents to act violently (physical aggression) if that hypothetical situation happened to them. The total number of responses that involve violence, threats of violence, insults, or acts of intimidation determines a separate item labeled "Hostile Responses". Thus the measurement of Hostile responses is not limited to physically aggressive acts.

A third item labeled "Effective Responses" is the total number of solutions that are not violent or hostile. Effective solutions include compromise, communication, assertion, and avoidance (departing from the situation). Finally, a fourth item, labeled "Violent Response" is scored if any of the first five responses involve violence or the use of force.

The fifth stage of the model is a selection of the response (Best Response; "Of all of the responses that you gave me earlier, what do you think is the very best way to deal with this situation?"). Response decision is also measured by the respondent's appraisal on a 5-point scale (Violence Efficacy Appraisal; "Would getting into a physical fight be the best or worst way to deal with this situation?"). Higher scores indicate the evaluation of a violent response as an effective response.

Outcome expectations are generated in the response decision stage. In the Social Problem Interview, the

expectation of conflict is measured by an experimenter-coded variable (Expects Violence; "What types of things could happen after?" the second response) and a participant-appraised variable (Violence Likelihood Appraisal; "If this situation happened to you, how likely would it end up in a physical fight?").

Finally the variable of greatest interest in this study is the behavioral enactment of a violent response. An item labeled "Violent Response Access" reflects the relative position of the first violent response. High scores on this scale reflect a more immediate access of a violent response. This item was selected as a measure of behavioral enactment because it represents the respondent's generation of a violent response and also the priority of that response.

Once all responses to the first vignette were recorded, the experimenter repeats the procedure until all four vignettes have been presented, at this time the respondent was asked the questions concerning his recollection of the first vignette.

In studies involving the interpretation of responses, it is important to establish a level of inter-rater reliability, to ensure that the results are not the product of a biased coding style. To establish the degree of inter-rater reliability of the social problem interview items, a

second-rater scored a random sample of 31 participants (approximately 15% of the sample). The second rater was blind to the specific hypotheses of this study, participant characteristics, and to all other responses provided by the participant on other measures. The second rater scored all of the social problem items listed above, for all four vignettes. These ratings were then compared with those of the experimenter using Pearson correlations. The Pearson correlations ranged from .77 for Hostile Attribution (Situation 4) to .98 for First Response (Situation Three). The majority of correlations were above .85.

Measures of Social Schema

Violent Belief Inventory

The Violent Belief Inventory was developed for this study to survey participants' general attitudes towards violent behavior. It is based on a belief questionnaire described in Slaby and Guerra's (1988) study involving cognitive mediators of aggression in adolescent offenders. Subjects are asked to respond according to their strength of belief toward 30 statements regarding the use of aggression (e.g., "People respect someone who wins a lot of fights"). Seven statements do not support the use of aggression and are scored in reverse (e.g. "The worst way to settle something is to beat the other guy up"). Responses are

measured on a 5-point Likert scale with each point representing a value ranging from "strongly disagree" (1) to "strongly agree" (5).

Preliminary research supporting the reliability of this instrument is based on the administration of a 20-item version of the belief scale to two separate samples of Canadian Federal offenders. In one sample of 100 research subjects (sample described in Bettman, 1993), the average inter-correlation of items within the test was .91.

In the current study (n = 208), scores on the Violent Belief Inventory ranged from 30 to 127, with a mean of 65.90 and a standard deviation of 19.81. The internal consistency (alpha) of the total score was .90. The Violent Belief Inventory is presented in Appendix C.

Measures of Violent Behavior

Violent Behavior Survey

The primary focus of this research is the relationship between cognitive deficits and violent behavior. The Violent Behavior Survey is based on the participant's self reported history of aggressive behavior. Respondents are asked 21 questions designed to measure the history of violent and aggressive behavior. Respondents are asked to estimate the frequency of aggressive behavior in a variety of contexts and situations. The response to the first question reflects

the self-reported history of lifetime fights ("How many times have you been in a physical fight with another person?"). The Violent Behavior Survey is presented in Appendix D.

Correctional File Data.

An objective measure of the subjects' histories of violence was required in addition to self-reported history. The Canadian Police Service Centre of the Royal Canadian Mounted Police provides a record of prior criminal convictions. A copy this record is kept on every offender's correctional file. All of the participant's prior and index convictions were categorized using a format similar to the one described by Hare (1991) for the assessment of psychopathy.

This study is primarily concerned with physical assaultiveness and injury to another person, rather than narcotic offenses or property offenses such as arson, theft, fraud, or mischief. Offenses such as murder (manslaughter) assault (aggravated and common), forcible confinement, threatening harm, and armed robbery were considered violent offenses (for a complete listing see Appendix H). Sexual assault offenses (aggravated sexual assault, attempted rape, indecent assault) were categorized separately, because it was unlikely that any sex offenders would have been selected

by a random sampling procedure. Sexual offenders are customarily assigned to other institutions.

Robbery is a criminal offense not easily classified as either violent or non-violent, yet coding it as a violent offense may have serious consequences to the interpretation of the results. If robbery is included as a violent offense the frequency of violent convictions is much higher than if it is excluded. In this study, robbery was not included among violent offenses. However, as will be reported, separate analyses were conducted on an expanded definition of violence that does include robbery.

Hare Psychopathy Checklist - Revised

The Hare Psychopathy Checklist - Revised is an interview and file-based rating scale of 20 items designed for the assessment of psychopathy in male forensic populations. The author provides a comprehensive manual that outlines the criteria for each of the 20 items (Hare, 1991). The assessment procedure consists of a structured interview and a method of collecting and categorizing file information. The checklist items are each scored on a 3-point scale (0, 1, or 2) based on the correspondence of the item to the personality and behavior of the respondent. Items are appraised on the basis of the person's lifetime functioning. The total score can range from 0 to 40. The

Hare Psychopathy Checklist has proven to be valid and reliable (Hare, 1991). Hare reports comparisons between the Psychopathy Checklist and global ratings of psychopathy yield significant correlations (r =. 83). The overall reliability was determined to be .88, inter-rater reliability yielded a coefficient of .93, and test-retest reliability resulted in a correlation of .92 (Hare, 1991).

In the current study (n = 208) the total scores of the Hare Psychopathy Checklist Revised ranged from 2 to 37, with a mean score of 21.25 and a standard deviation of 8.96. Factor One scores ranged from 0 to 16 with a mean of 8.51 and a standard deviation 0f 3.82. Factor Two scores ranged from 0 to 18 with a mean score of 10.57 and a standard deviation of 4.85. The internal consistency (alphas) of the total score was .88, factor one score was .75, and factor two score was .84.

Measures used to test alternative explanations

Shipley Institute of Living Scale.

It is possible that the cognitive processes and products examined in this study are correlated with intelligence and that more general cognitive deficits are associated with violence. The Shipley Institute of Living Scale (Zachary, 1994) was designed to assess general

intellectual functioning in adults by testing vocabulary and abstract thinking.

A 40-item multiple-choice vocabulary test is used to measure verbal ability. The 20-item abstraction subtest presents an uncompleted sequence of logically related characters. The entire test is administered in 20 minutes (10 minutes for each subsection). Correlations between the Shipley Institute of Living Scale Total Score and the Wechsler Adult Intelligence Scale - Revised Full Scale Score range from .73 to .90 with a median correlation of .79 (Zachary, 1994). The Shipley Institute of Living Scale has been validated on a sample of American criminal offenders. Wood, Conn and Harrison (1977) found that the scale was an adequate predictor of Wechsler Adult Intelligence Scale - Revised Full Scale Score.

In the current study (n = 208) the Shipley Institute of Living Scale estimate of the Wechsler Adult Intelligence Scale - Revised Full Scale Score was used to measure general intellectual ability. Scores ranged from 58 to 124, with a mean of 96.27 and a standard deviation of 14.27.

State-Trait Anger Expression Inventory

The State-Trait Anger Expression Inventory (Spielberger, 1988) measures the experience and expression of anger. Anger is conceptualized as having two major

components - an emotional state and a dispositional trait. State anger is measured in the present study to examine the mediating effects of emotional arousal at the time of the investigation. The State Anger measure is used to test the possibility that violent responding to social situations is associated with emotional arousal at the time of presentation.

A 10-item scale that reflects the intensity of angry feelings at a particular time measures State Anger. Individuals rate themselves on a 4-point scale that either reflects the intensity of their angry feelings or the frequency of anger expression. Normative data have been collected on prison inmate populations (Spielberger, 1988). Adequate reliability has been established. Preliminary research for this study involved the administration of the State-Trait Anger Expression Inventory to Canadian federal offenders. Cronbach's alpha for this pilot sample was .83 (n=100). (Sample described in Bettman, 1993).

In the current study (n = 208), the subscale of the state anger scale was used to measure anger at the time of testing. State anger scores ranged from 10 to 28, with a mean score of 11.2 and a standard deviation of 2.72. The internal consistency (alpha) of the State Anger subscale was .83.

Balanced Inventory of Desirable Responding

It has often been recognized that people may answer self-report questionnaires inaccurately, in ways that are considered socially desirable. The Balanced Inventory of Desirable Responding (Paulhus, 1990) was developed to measure a tendency to give socially desirable answers. This instrument was incorporated in the test battery because distortions caused by response bias can contaminate the validity of other measures.

The interference of response style is particularly relevant to the self-reported measurement of social cognition and violent behavior. Dutton and Hemphill (1992) found that subscales of the Balanced Inventory of Desirable Responding were negatively correlated with self-reported physical abuse and anger in a sample of domestically violent men. Kroner and Weekes (1996a) found a significant association between increased victim injury and lower scores of impression management in a sample of incarcerated rapists.

The Balanced Inventory of Desirable Responding is a 40-item measure that can be scored on a 7-point Likert scale or as a dichotomous scale (the summation of extreme responses on the 7-point scale). The author of the test suggests that a dichotomous scoring method is preferred, and

this was the method used in the current study. There are two subscales. The first subscale, Self-Deceptive Enhancement, measures the tendency to give honest but exaggerated positive self-reports. The second subscale, Impression Management, measures purposeful attempts to impress others.

The author of the test reports significant correlations with other tests of socially desirable response bias (Paulhus, 1994). The Balanced Inventory of Desirable Responding correlates with the Marlowe-Crowne Social Desirability Scale (r =. 71). There are also significant correlations between the impression management subscale and measures that are typically used to detect lying (Eysenck's Lie scale, MMPI Lie Scale). Values of coefficient alphas for the total score ranged from .83 to .85 in a non-clinical sample (n = 100). Test-retest correlations were .69 for the Self Deceptive Enhancement subscale and .65 for the Impression Management subscale. Kroner and Weekes (1996b) document external validation for the use of the Balanced Inventory of Desirable Responding with incarcerated offenders.

In the current study (n = 208) the total scores of the Balanced Inventory of Desirable Responding ranged from 2 to 32, with a mean score of 15.4 and a standard deviation of 7.1. Scores on the Impression Management Subscale ranged

from 0 to 18, with a mean of 6.8 and a standard deviation of 4.2. Scores on the Self-Deception Enhancement Subscale ranged from 1 to 18, with a mean of 8.6 and a standard deviation of 4. The internal consistency (alphas) of the total score was .85, Impression Management Subscale was .75, and Self-Deception Enhancement Subscale was .81. The Balanced Inventory of Desirable Responding is presented in Appendix E.

Summary of the psychological inventories

Table 1 lists the mean, standard deviation, standard error of measurement, range, and alpha coefficients for the psychological scales used in this study.

Procedure

The selection of subjects for the study was determined by an arbitrary sampling of all the offenders in the populations of both Collins Bay and Frontenac institutions. The arbitrary sample was obtained by selecting every fourth name in an alphabetical listing of the offender population.

All of the offenders selected to participate in this study were sent a "pass" through the internal mail. A "pass" is a standard letter instructing security staff to allow the participant access to the appointment at the designated time. Offenders who did not respond to the initial pass were recalled at a later date, though only two attempts were made

Table 1

Summary Statistics For The Psychological Inventories Used In This Study (n = 208)

	Mean	Standard Error	Standard Deviation	Range	Alpha Coefficient
Violent Beliefs Inventory	65.9	1.3	19.8	30-127	.90
State Trait Anger Expression Inventory					
State Anger	11.2	.19	2.7	10-28	.83
Balanced Inventory of Desirable Responding					
Total Score	15.4	.49	7.1	2-32	.85
Impression Management	6.8	.29	4.2	0-18	.75
Self-Deception Enhancement	8.6	.28	4	1-18	.81
Psychopathy Checklist - Revised					
Total Score	21.2	.62	8.9	2-37	.88
Psychopathy Factor One	8.5	.26	3.8	0-16	.75
Psychopathy Factor Two	10.6	.34	4.8	0-18	.84
Shipley Institute Of Living Scale					
WAIS IQ Estimate	96.2	.99	14.2	58-124	

for each potential participant. All interviews took place in offices in the Psychology Departments at each institution.

Once the offender presented himself at the specified location, a research assistant explained the purpose and procedure of the study in detail. The research assistant assured participants that their involvement was voluntary and confidential. The offender also received a written copy of the information form (Appendix F). If the offender agreed to participate, he was asked to sign a consent form (Appendix G).

Subjects were informed about the purpose of the study, the selection procedures, the nature of administration, and the inclusion of institutional file data. Participants were informed that they could withdraw for any reason, without explanation, and that any information collected on withdrawn participants would be destroyed. Participants were also assured of confidentiality. A procedure for grievance included the names of the researcher's supervisor, and the head of the Department of Psychology of Queen's University.

The Consent Form reiterated the limits of confidentiality, outlined the procedure and conditions of withdrawal, and provided written consent to have the participant's institutional files reviewed by the

researcher. The consent form was signed and dated by the offender after reading the information form.

After consenting to participate, the offender was given the Social Problem Interview. All interviews were conducted by one of two research assistants who were unaware to the specific hypotheses being tested in this study. A second phase of the interview focused on the participant's criminal behavior. This section included a structured interview that allowed the researcher to score the items of the Hare Psychopathy Checklist - Revised (PCL-R).

The research assistants were provided with detailed instructions and scripted procedures for both the interview and the Hare Psychopathy Checklist - Revised. All scores on the Hare Psychopathy Checklist were reviewed in detail by the experimenter and compared against institutional file information, criminal records, psychological reports and prior administrations.

The research assistants asked standardized questions and wrote down the participant's responses verbatim. These written responses were coded later by the experimenter. Both research assistants had mental health service experience (one was an undergraduate psychology student, the other had a Psychology B.A. degree and a Behavioral Science Technician diploma). Both research assistants attended a two-day

seminar in the administration and scoring of the Hare Psychopathy Checklist - Revised. The research assistants participated in several interviews together to develop a standard approach and procedure. Nine randomly selected interviews were audiotaped and reviewed by the experimenter to insure interview integrity.

Once the interviews were complete, the participant filled out a battery of written psychological inventories, as described above. For the participants who had difficulty reading, some items were read aloud by the research assistant. The interview and written tests were administered privately and individually in an office.

Approval to conduct the research was received from the research committee of the Correctional Service of Canada (Ontario region), the Wardens of Collins Bay Institution and Frontenac Institution, the Inmate Committees of both institutions, and the Ethics Committee of the Department of Psychology at Queen's University.

Results

Characteristics of the data.

All the variables used in the statistical analyses described below were evaluated for their adherence to univariate and multivariate assumptions. Standardized scores were used to determine if particular cases were extreme or unduly influential. Univariate outliers were discovered for two participants who reported an excessive history of violent conflict. One individual reported 3,000 lifetime fights, another reported 1,000. Both scores significantly influenced the distribution even after the variable was transformed using a logarithmic transformation. To reduce this influence, the frequency of reported violence was reduced to the next lowest score in the distribution (200) for both individuals.

Almost all of the variables measuring prior history and self-reported violence were significantly skewed. The skewness results from the disproportionate number of participants who had no history of violent crime. Therefore a logarithmic transformation was used to normalize the distributions of the total number of self-reported fights, total convictions for violent crimes (excluding robbery), and total convictions for violent crimes (including robbery).

Homoscedasticity and linearity were evaluated by visual interpretations of the scatterplots between the residuals and the variables, and these assumptions were met. An analysis of the Mahalanobis distances ($p < .001$ criterion) revealed no cases of multivariate outliers.

Responses to Social Situations

Each of the four situations elicited different frequencies of violent responses. It is important to remind the reader that the current study does not define a "violent response" to a hypothetical situation as a response of physical aggression towards the interviewer. None of the respondents physically harmed or threatened the research assistants. Rather a "violent response" is a statement or intention to respond to the hypothetical situation with violence. The percentages of the types of responses to each of the four hypothetical situations are presented in Table 2.

Table 2 shows that situation four was the least provocative. Only 16 (7.7%) participants responded violently to this hypothetical situation of a woman spilling a drink on their lap. Situation three was the most provocative: 105 (50.5%) participants considered at least one violent response to the scenario of a man spilling a drink on their lap.

Table 2

Percentages of Response Type to the Four Social Problems (n = 208)

	Situation One Friend demands interest on loan	Situation Two Man uses pool table when you want it	Situation Three Man spills drink on your lap	Situation Four Woman spills drink on your lap
Expression of at least one violent response	26%	39%	51%	8%
Expression of at least one hostile response	50%	44%	65%	37%
Expression of at least one non-violent response	93%	94%	86%	95%
Causal Attributions	38%	67%	56%	43%
Positive Definitions	31%	7%	16%	22%
Hostile Attributions	39%	39%	57%	37%
Neutral Attributions	50%	30%	32%	48%
Hostile Goal	11%	13%	27%	4%
Positive Goal	52%	27%	20%	36%
Violence is the best response	4%	3%	10%	1%
Expects Violent Outcome	39%	44%	57%	14%

Thus, the most provocative situation and the least provocative situation were similar in every respect except for the sex of the antagonist. All subsequent analyses use the summed responses to all four situations. The summed responses for each item of the Social Problem Interview are the variables of interest, because they best represented a general style of social information processing.

Relationships among Social Problem Interview Responses

Participants were asked a variety of questions regarding their likely response to the scenarios. The interview questions were designed to elicit responses that could represent each stage of the social information-processing model. The stages will be considered in the order of their conjectured occurrence.

Encoding of cues stage

The preliminary stage of this social information-processing model proposes that the selection of a violent response is associated with a biased encoding of environmental information. Pearson correlations were used to determine the interrelationship of several responses relevant to the encoding of environmental cues and the frequency of violent responding, both in the hypothetical situations and in actual previous behavior. This set of Pearson correlations is presented in Table 3.

As shown in Table 3, the preference for a violent response as measured by 'Violent Response Access' was significantly correlated with each component of the cue encoding stage and measures of violent behavior. Participants who expressed violent responses were more likely to state that they would act immediately (Impulsivity Appraisal) and would be angry (Anger Appraisal). The high inter-correlation between impulsivity, anger appraisal and violent response preference is important because it suggests that expectations of immediacy and arousal are strongly associated with the preference to respond with violence. It is important to consider that those more likely to generate a violent response to hypothetical vignettes are more likely to have a history of violent behavior and to score higher on a measure of psychopathy. Participants who preferred a violent response to the situation were also more likely to recall hostile information about the circumstances of the first situation (Situation Recall) and about the antagonist (Antagonist Recall) described in that situation. All but two of the encoding deficits were significantly associated with the frequency of self-reported fights, the frequency of violent criminal convictions, and the Hare Psychopathy Checklist. Hostile recollections were not significantly associated with violent convictions or psychopathy. The

Table 3

Correlation Matrix of Cue Encoding, Violent Behavior, And Psychopathy (n = 208)

	Information Request	Impulsivity Appraisal	Anger Appraisal	Situation Recall	Antagonist Recall	Self-Reported Fights	Violent Convictions	Psychopathy (PCL-R)
Violent Response Access	.03	.57**	.74**	.31**	.40**	.66**	.42**	.56**
Information Request		-.02	.09	.05	.00	.04	-.12	-.03
Impulsivity Appraisal			.70**	.24**	.36**	.41**	.31**	.43**
Anger Appraisal				.24**	.40**	.57**	.36**	.52**
Situation Recall					.37**	.33**	.13	.13
Antagonist Recall						.35**	.24**	.30**
Self-Reported Fights							.50**	.60**
Violent Convictions								.52**

**. Correlation is significant at the 0.01 level (2-tailed).

request for more information was not significantly related to any of the encoding deficits or measures of violent behavior.

Interpretation of cues stage

The social information-processing model posits that aggressive individuals misinterpret social situations by attributing hostile intent to others and blaming others for the cause of the problem. Table 4 presents the Pearson correlations between Violent Response Access and responses related to the interpretation of social information. The correlations presented in Table 4 demonstrate that interpretation biases are significantly associated with the selection of a violent response, violent behavior and psychopathy. Participants who expressed a preference for violent solutions (Violent Response Access) were more likely to blame the antagonist for causing the problem (Causal Attribution, $r = .49$, $p < .01$), and more likely to attribute deliberate hostile intent problem (Hostile Attribution, $r = .50$, $p < .01$). They were significantly less likely to express accidental or circumstantial causes (Neutral Attribution, $r = -.45$, $p < .01$). These attribution biases are significantly associated with the frequency of violent behavior and psychopathy.

Table 4

Correlation Matrix of Cue Interpretation, Violent Behavior, And Psychopathy (n = 208)

	Causal Attribution	Positive Definition	Hostile Attribution	Neutral Attribution	Provocation Appraisal	Respect Appraisal	Self-Reported Fights	Violent Convictions	Psychopathy (PCL-R)
Violent Response Access	.49**	-.40**	.50**	-.45**	.63**	.57**	.66**	.42**	.56**
Causal Attribution		-.48**	.54**	-.45**	.48**	.46**	.37**	.22**	.25**
Positive Definition			-.45**	.44**	-.37**	-.44**	-.39**	-.25**	-.35**
Hostile Attribution				-.65**	.50**	.50**	.49**	.26**	.38**
Neutral Attribution					-.41**	-.37**	-.40**	-.20**	-.37**
Provocation Appraisal						.80**	.51**	.36**	.50**
Respect Appraisal							.47**	.32**	.51**
Self-Reported Fights								.50**	.60**
Violent Convictions									.52**

**. Correlation is significant at the 0.01 level (2-tailed).

Clarification of goals stage

A violent response selection was also expected to be associated with the choice of punitive goals and difficulties regulating emotional arousal. The results presented in Table 5 confirm that violent responding is significantly positively correlated with the selection of hostile goals (r = .67, p < .01) and significantly inversely correlated with the selection of positive goals (r = -.18, p < .01).

Table 5

Correlation Matrix Of Goal Clarification, Violent Behavior, And Psychopathy (n = 208)

	Hostile Goal	Positive Goal	Anger Control Appraisal	Self-Reported Fights	Violent Convictions	Psychopathy (PCL-R)
Violent Response Access	.67**	-.18**	.68**	.66**	.42**	.56**
Hostile Goal		-.31**	.53**	.49**	.35**	.38**
Positive Goal			-.19**	-.19**	-.04	-.10
Anger Control Appraisal				.57**	.38**	.47**
Self-Reported Fights					.50**	.60**
Violent Convictions						.52**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5 shows that the expectation of poor anger control (Anger Control Appraisal) is significantly positively related to a higher frequency of violent responding (r = .68, p < .01). Violent behavior and psychopathy are also significantly positively associated with the expression of a hostile goal and the expectation that anger would not be controlled.

The correlations provide mixed support for the expectation that violent behavior would be inversely related to the formulation of positive goals. Only self-reported violence maintained this association. The frequency of violent criminal convictions and measures of psychopathy were not significantly correlated with the expression of positive goals.

Response construction stage

In developmental studies involving children's responses to hypothetical social problems, much emphasis is placed on the child's ability to generate solutions and the quality and quantity of those solutions. Table 6 presents the Pearson correlations of the response construction and access style of the participants in this study.

As shown in Table 6, Violent Response Access was significantly correlated with the total number of responses to the situation (r = .37, p < .01).

Table 6

Correlation Matrix of Response Construction, Violent Behavior, and Psychopathy (n = 208)

	Total Responses	Effective Responses	Hostile Responses	Self-Reported Fights	Violent Convictions	Psychopathy (PCL-R)
Violent Response Access	.37**	-.31**	.77**	.66**	.42**	.56**
Total Responses		.60**	.52**	.20**	.19**	.34**
Effective Responses			-.37**	-.33**	-.17*	-.15*
Hostile Responses				.58**	.40**	.55**
Self-Reported Fights					.50**	.60**
Violent Convictions						.52**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Notwithstanding this artifact of coding, those who preferred a violent response were much more likely to provide hostile responses. When solutions are coded as effective (withdrawal, negotiation, passive) or hostile (insults, threats, intimidation, violence), it is clear that those who respond with violence generate more hostile and less effective solutions (r = .77, p < .01). The strength of this correlation is only partially due to the fact that

violent responses are included in the scoring of the number of hostile solutions (in addition to threats, insults, and intimidation). The matrix of correlations shown in Table 6 also confirms that measures of violent behavior and psychopathy are significantly associated with the quality and quantity of responses.

Response decision stage

Once a set of responses has been generated, the next stage in the sequence of social information processing involves the evaluation and selection of a response. Several factors are thought to play a role in this decision. One factor concerns the estimation that the response selected would resolve the problem. As seen in Table 7, Violent Response Access is significantly positively correlated with the selection of violence as the best response (r = .55, p < .01). This relationship is supported by the participant's appraisal of violence as the "best" or "worst" way of dealing with the problem (Violence Efficacy Appraisal).

Decision-making is also influenced by expected outcomes. Violent Responding was significantly positively correlated with the expectation that a physical fight would occur following the participant's second response to the situation (Expects Violence; r = .76, p < .01). Similarly, violent responding was significantly correlated with the

Table 7

Correlation Matrix of Response Decision, Violent Behavior, and Psychopathy (n = 208)

	Violence Efficacy Appraisal	Expects Violence	Violence Likelihood Appraisal	Efficacy Appraisal	Total fights (self-report)	Total Violent Convictions	Psychopathy
Violent Response Access	.57**	.76**	.75**	-.45**	.66**	.42**	.56**
Best Response	.61**	.42**	.54**	-.16*	.40**	.31**	.32**
Violence Efficacy Appraisal		.45**	.70**	- 36**	.47**	.24**	.40**
Expects Violence			.70**	-.42**	.54**	.44**	.57**
Violence Likelihood Appraisal				-.50**	.66**	.44**	.53**
Efficacy Appraisal					-.33**	-.33**	-.37**
Total fights (self-report)						.50**	.60**
Total Violent Convictions							.52**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

participant's appraisal of the likelihood of a fight (Violence Likelihood Appraisal). The strength of these interrelations is probably influenced by the action chosen by the participant. If the participant chooses to enact an aggressive response, he would expect a physical confrontation.

Finally, deciding on a course of action is thought to depend on the participant's self-appraisal of his ability to resolve the problem. The significant negative correlations between Efficacy Appraisal and measures of violence suggest that those who report greater violence and who had more numerous convictions for violent crimes were more likely to expect that they would not handle the situations well. The correlations demonstrate that those who preferred a violent response to the hypothetical vignettes, even those who felt that a violent response was the best way of dealing with the situation (Violence Efficacy Appraisal) were more likely to recognize that they would not handle the problems well (Efficacy Appraisal).

Consistent with a preference for violent solutions, the expectation of conflict, and the endorsement of violence as an effective solution correlated positively with measures of violent behavior and psychopathy.

Relationships between Schema Measures and Situation Responses

The social information-processing model is conceived as a multidimensional process that is interdependent with social knowledge and previous experience (referred to as the "data base" in the social information-processing model). Table 8 presents the Pearson correlations between a set of representative measures of each social information-processing stage and a measure of social schema (Violent Belief Inventory).

Each of the representative processing measures correlated significantly with the Violent Belief Inventory. The endorsement of violent beliefs was significantly positively correlated with self-reported fights, violent convictions, and psychopathy. The significant inter-correlations between each of the social information processing variables are noteworthy.

To summarize, the measures representing each stage of the social information-processing model were significantly correlated with violent response preference, self-reported violence, violent convictions, and psychopathy. These significant relationships are evident when the experimenter interpreted interview responses and when the participants appraised the situation themselves.

Table 8

Correlation matrix of violent beliefs, processing deficits, violent behavior, and psychopathy (n = 208)

	Antagonist Recall (S1)	Hostile Attribution	Provocation Appraisal	Hostile Goal	Anger Control Appraisal	Hostile Responses	Best Response	Violence Efficacy Appraisal	Violent Response Access	Total Violent Convictions	Total fights (self-report)	Psychopathy Checklist
Violent Beliefs Inventory	.26**	.37**	.49**	.37**	.55**	.40**	.39**	.50**	.50**	.34**	.59**	.38**
Antagonist Recall (S1)		.28**	.38**	.28**	.41**	.34**	.23**	.30**	.40**	.24**	.35**	.30**
Hostile Attribution			.50**	.42**	.44**	.50**	.31**	.30**	.50**	.26**	.49**	.38**
Provocation Appraisal				.46**	.67**	.55**	.39**	.54**	.63**	.36**	.51**	.50**
Hostile Goal					.53**	.53**	.60**	.52**	.67**	.35**	.49**	.38**
Anger Control Appraisal						.58**	.50**	.64**	.68**	.38**	.57**	.47**
Hostile Responses							.35**	.40**	.77**	.40**	.58**	.55**
Best Response								.61**	.55**	.31**	.40**	.32**
Violence Efficacy Appraisal									.57**	.24**	.47**	.40**
Violent Response Acces										.42**	.66**	.56**
Total Violent Convictions											.50**	.52**
Total fights (self-report)												.60**

**. Correlation is significant at the 0.01 level (2-tailed).

Relationship between processing, behavior, intelligence, mood, and response bias.

Several alternative explanations for a relationship between social information processing deficits and violent responding are plausible. One conceivable explanation is that intellectual deficits may be responsible for less reasoned attributions, an inability to generate solutions, and poor decision making. The Pearson correlations presented in Table 9 indicate that intelligence, as measured by the Shipley Institute of Living Scale, is not significantly related to any of the primary social-information processing variables.

A second possibility is that the respondent's mood during the interview influenced social cognitions. It is possible that the participants who responded violently to hypothetical situations were emotionally aroused or angered at the time of the test. Hostile and violent responding may have reflected the subject's mood rather than the processing of situational information. The Pearson correlations presented in Table 9 show that self-reported anger at the time of the interview, as measured by the State subscale of the State-Trait Anger Expression Inventory, is only associated with the attribution of hostility. State anger is

Table 9

Correlations of Processing Measures, Violent Behavior, and Psychopathy with Intelligence, Mood and Response Bias

	Shipley WAIS IQ Estimate	State Anger (STAXI)	Balanced Inventory of Desirable Responding: Impression Management	Balanced Inventory of Desirable Responding: Self Deception Enhancement	Balanced Inventory of Desirable Responding: Total Score
Measures of Social Information Processing Distortions					
Data Base (Schema) Measures					
Violent Beliefs Inventory	.03	.12	-.49**	-.27**	-.44**
Stage 1: Encoding of Cues					
Antagonist Recall	.01	.00	-.18**	-.13	-.18**
Stage 2: Interpretation of Cues					
Hostile Attribution	.08	.15*	-.35**	-.24**	-.34**
Provocation Appraisal	.00	.02	-.30**	-.20**	-.29**
Stage 3: Clarification of Goals					
Hostile Goal	-.06	.09	-.27**	-.10	-.22**
Anger Control Appraisal	.08	.02	-.39**	-.25**	-.36**
Stage 4: Response Construction					
Hostile Responses	.08	.01	-.31**	-.18**	-.28**
Stage 5: Response Decision					
Best Response	.05	.01	-.19**	-.15*	-.19**
Violence Efficacy Appraisal	.00	-.08	-.26**	-.18**	-.25**
Stage 6: Behavioral Enactment					
Violent Response Access	.07	.03	-.36**	-.13	-.28**
Measures of Violent Behavior					
Self-Reported Fights	.14	.06	-.43**	-.18**	-.36**
Violent Convictions	.10	.06	-.28**	-.25**	-.31**
Measures of Psychopathy					
Hare Psychopathy Checklist – Revised (total score)	.08	.04	-.26**	-.21**	-.27**
Factor One	.07	-.07	-.03	-.01	-.01
Factor Two	.06	.13	-.38**	-.30**	-.39**

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

A third explanation is that a desire to make a good impression or a tendency towards self-deception may have influenced the responses to hypothetical situations. Table 9 includes correlations between scores on the Balanced Inventory of Desirable Responding and the primary social information processing variables. Each social information-processing variable was inversely correlated with response bias measures. The correlations suggest that responding to situations with hostility and violence is inversely related to self-deception and a desire to make a good impression. The findings support the claim that providing socially appropriate responses to vignettes is associated with impression management and self-deception. Therefore, subsequent analyses controlled for this type of response bias.

Multiple Regression: Predicting Violent Responding

Most of the studies demonstrating an association between aggression and social cognition have used between-group designs to determine if individuals ranked as high or low on aggression differ significantly on social cognitive dimensions. This univariate approach prevents an identification of the unique contributions of each stage to

the selection of a violent response or real life violent behavior

This section will present the results of several hierarchical multiple regression equations to further explore the associations demonstrated by the correlations in the preceding section. Hierarchical regression was selected because there is a sufficient theoretical rationale for the ordering of the independent variables. This procedure can control for the overlap among related variables in the prediction of a dependent variable. This is important because the social information processing variables are related to one another (Table 8).

The first hierarchical multiple regression equation investigated the relative contributions of each primary social information-processing variable to the prediction of violent responding. In this equation, the sequence of accessing a violent response (Violent Response Access) is the dependent variable. The independent variables are the Social Problem Interview responses representing the theoretical stages of the social information-processing model.

The total score of the Balanced Inventory of Desirable Responding entered the regression equation first. This priority of entry permits an examination of the

contributions of information processing variables over and above the effects of response bias. It is necessary to examine the covariance because both response bias subscales correlated significantly with violent responding and primary social information processing variables. Following the entry of the response bias measure, an estimate of intelligence and an appraisal of anger entered the equation. The sequence of entry essentially controls for the influence of response bias, intelligence, and mood. Once these variables were statistically controlled, measures representing each social problem solving stage were forced into the equation in individual steps.

As evinced by the hierarchical multiple regression model summary presented in Table 10, the $\underline{R}^2$ adjustment of the Balanced Inventory of Desirable Responding (adjusted $\underline{R}^2$ = .076, $\underline{p}$ <. 001) accounted for 8% of the variance in the selection of a violent response. The subsequent entry of intellectual ability and state anger failed to contribute substantial variance to the prediction.

When response bias, intelligence, and mood were statistically controlled each the variables representing social schema (Violent Belief Inventory) and social cognitive distortions accounted for a significant portion of the variance. Additions of the social information-processing

Table 10

Summary of the Hierarchical Regression of Processing Stages on Violent Response Access (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			9.66**		
Step 1: Response Bias					
BIDR-Total	-.283	.067	-4.23**	.076	.080**
Step 2: Intellectual Ability					
Shipley WAIS-IQ	.058	.067	.861	.075	.003
Step 3: Anger					
State Anger (STAXI)	-.007	.068	-.098	.070	.000
Step 3: Schema					
Violent Belief Inventory	.472	.067	7.01**	.248	.179**
Step 4: Encoding of Cues					
Antagonist Recall	.289	.059	4.85**	.323	.077**
Step 5: Interpretation					
Hostile Attribution	.324	.061	5.33**	.404	.082**
Step 6: Goal Clarification					
Hostile Goal	.472	.053	8.96**	.573	.166**
Step 7: Response Construction					
Hostile Responses	.478	.049	9.68**	.708	.132**
Step 8: Response Decision					
Best Response	.160	.047	3.38**	.723	.015**

* $p < .05$
** $p < .01$
note:
Dependent variable: Violent Response Access

Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
Shipley WAIS IQ =	Shipley Institute of Living – Wechsler Adult Intelligence Survey Revised, Full Scale Intelligence Estimate
State Anger (STAXI) =	State-Trait Anger Expression Inventory – State Anger Subscale
Violent Belief =	Violent Belief Inventory

variables representing each stage of the model significantly improved upon this prediction.

In combination, all of the variables accounted for slightly more than 72% of the variance associated with Violent Response Access (adjusted $\underline{R}^2$ = .723). The multiple R when all variables have entered the equation was .85. As would be expected with such a high proportion of explained variance, Analysis of Variance Statistic $\underline{F}$ (9,198) = 60.91, $\underline{p}$< .001, shows that the simultaneous test that each coefficient is 0 can be rejected.

The substantial results prompted concerns that the association may be an artifact of experimenter bias. Because five information-processing variables were coded from open interview responses, it is possible that one or more of the participant's responses affected the coding of other responses. An additional hierarchical multiple regression was performed to explore this possibility. For this equation, summarized in Table 11, only participants' direct appraisals of the situations entered as independent variables. The encoding of information and the construction of hostile responses could not be represented because the respondent did not appraise these two stages. The clarification of goals was replaced by participant

Table 11

Summary of the Hierarchical Regression of Processing Appraisals on Violent Response Access (n=208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)					
Step 1: Response Bias BIDR-Total	-.283	.067	-4.23**	.076	.080**
Step 2: Intellectual Ability Shipley WAIS-IQ	.058	.067	.86	.075	.003
Step 3: Anger State Anger (STAXI)	-.007	.068	-.09	.070	.000
Step 4: Schema Violent Belief Inventory	.472	.067	7.01**	.248	.179**
Step 5: Interpretation Provocation Appraisal	.506	.060	8.42**	.441	.192**
Step 6: Goal Clarification Anger Control Appraisal	.410	.070	5.86**	.520	.080**
Step 7: Response Decision Violence Efficacy Appraisal	.158	.065	2.42*	.531	.013*

* $p < .05$

** $p < .01$

note:
Dependent variable: Violent Response Access
Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
Shipley WAIS IQ =	Shipley Institute of Living – Wechsler Adult Intelligence Survey Revised, Full Scale Intelligence Estimate
State Anger (STAXI) =	State-Trait Anger Expression Inventory – State Anger Subscale
Violent Belief =	Violent Belief Inventory

appraisals of anger control. This substitution is based on Crick and Dodge's contention that emotional arousal is regulated in the goal clarification stage (Crick & Dodge, 1994).

As in the earlier regression, measures of response bias entered the equation first, followed by a measure of intelligence, then mood, social schema measures, and finally participant-appraised social-information processing variables. As shown in Table 11, the majority of the variance in Violent Response Access can still be accounted for by the participant's direct appraisals of the situations. Even with the exclusion of two processing stages (Encoding of Cues and Response Construction) the remaining appraisals accounted for 53% of the variance. Each of the social information processing appraisals made significant contributions to the prediction of Violent Response Access. Thus, social information processing appraisals are significant predictors of violent responding even when coder interpretation plays no role.

Postdiction of Violent Behavior

The two preliminary multiple regression equations illustrate the significant contributions of each stage of the social information processing model to the prediction of violent responding. Although these equations are consistent

with a model of antagonistic social cognition, most of the constructs are artificial. The variable that was predicted in the preceding regression equations represented the intended response to a hypothetical situation. Therefore, additional hierarchical regression equations were used to evaluate the contribution of the social information-processing model to actual behaviors. The dependent variables selected to represent violent behaviors are the self-reported frequency of physical fights and the total convictions for violent crimes (with and without the inclusion of robbery offences). Three distinct hierarchical regressions were used to independently measure these behaviors.

As before, a measure of response bias was entered first and then each successive stage of the social information-processing model was entered in to the equation. In the multiple regressions that follow, some changes were made. First, intelligence and mood, two variables that may have influenced social cognition were excluded. These variables did not correlate with any of the independent or dependent variables in the study, nor did they significantly contribute to the prediction of a violent response preference.

A second change in the equation concerned the measurement of each social information processing stage. In an effort to represent the construct of each stage, composite variables were used to postdict behavior. Preliminary regression equations demonstrated that violent responding could be postdicted from experimenter-coded and participant-appraised responses. Earlier correlations confirmed that both measurement methods are associated with violent behavior. Each composite variable combined the standardized measure of an experimenter-coded and a participant-appraised response. The objective of aggregating social information processing variables was to reduce measurement error.

The encoding of cues stage and the response construction stages did not have a participant-appraised measure. The encoding of cues stage was assessed by the participant's recollection of the antagonist in the first situation (Antagonist Recall). The response construction stage was represented by Violent Response Access, the dependent variable used in the two preliminary regressions. The reader will recall that Violent Response Access measures the relative priority of a violent response in the total quantity of responses generated by the participant.

As observed in the hierarchical multiple regression summary presented in Table 12, the model of social cognition accounts for a significant amount of the variance in the self-reported frequency of physical fights. With $\underline{R}^2$ adjusted, 53% of the variance in self-reported violence can be explained by a combination of response style, schema measures, and responses to social situations. Only one of the composite variables, the selection of violence as the preferred response (Conflict Evaluation) failed to contribute significant incremental postdiction to self-reported violent history.

An additional hierarchical multiple regression tested the ability of the social information processing stages to postdict the number of prior violent convictions (excluding robbery convictions). Table 13 summarizes the hierarchical multiple regression model.

As displayed in Table 13, the model significantly postdicts violent crime ($\underline{R}^2 = .48$, $\underline{F}\ (7,200) = 8.60$, $\underline{p} < .01$). The construction of a violent response (Violent Response Access) and the appraisal of a violent response as the best way to deal with the situation (Conflict Evaluation Composite) did not significantly contribute to the equation.

Table 12

Summary of the Hierarchical Regression of Processing Stages on Self-Reported Violence (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			15.18**		
Step 1: Response Bias BIDR-Total	-.355	.065	-5.45**	.122	.126**
Step 2: Schema Violent Belief Inventory	.535	.062	8.57**	.351	.231**
Step 3: Encoding: Antagonist Recall	.200	.057	3.53**	.385	.037**
Step 4: Hostile Attribution Composite	.328	.063	5.21**	.455	.071**
Step 5: Hostile Goal Composite	.269	.070	3.82**	.489	.036**
Step 6: Violent Response Access	.352	.080	4.41**	.532	.044**
Step 7: Conflict Evaluation Composite	-.023	.070	-.33	.530	.000

* $p < .05$

** $p < .01$

note:
Dependent Variable: The total number of physical fights (self-report)

Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
Hostile Attribution Composite	Hostile Attribution (standardized) + Provocation Appraisal (standardized)
Hostile Goal Composite	Hostile Goal (standardized) + Anger Control Appraisal (standardized)
Conflict Evaluation Composite	Best Response (standardized) + Violence Efficacy Appraisal (standardized)

Table 13

Summary of the Hierarchical Regression of Processing Stages on Violent Criminal Convictions (Violent Convictions Without Robbery) (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			10.70**		
Step 1: Response Bias BIDR-Total	-.306	.066	-4.61**	.089	.094**
Step 2: Schema Violent Belief Inventory	.249	.072	3.45**	.135	.050**
Step 3: Encoding: Antagonist Recall	.153	.066	2.29*	.153	.022*
Step 4: Hostile Attribution Composite	.190	.078	2.45*	.173	.024*
Step 5: Hostile Goal Composite	.238	.088	2.70**	.198	.028**
Step 6: Violent Response Access	.194	.104	1.86	.208	.013
Step 7: Conflict Evaluation Composite	-.036	.092	-.394	.205	.001

* $p < .05$

** $p < .01$

note:

Dependent Variable: The total number of violent convictions (not including robbery)

Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
Hostile Attribution Composite	Hostile Attribution (standardized) + Provocation Appraisal (standardized)
Hostile Goal Composite	Hostile Goal (standardized) + Anger Control Appraisal (standardized)
Conflict Evaluation Composite	Best Response (standardized) + Violence Efficacy Appraisal (standardized)

The failure of conflict evaluation to add incremental postdictive power is consistent with the earlier analysis for self-reported violence. Statistically this is not surprising, given that very few participants endorsed violence as an effective strategy (see Table 2). However, the construction of a violent response, arguably the primary feature of Crick and Dodge's theory, failed to add to the postdiction of violent convictions, even though this measure contributed to the postdiction of self-reported violence.

As mentioned in the Method section, robbery convictions were classified separately from other violent crimes because the inclusion of robbery would significantly increase the frequency of violent convictions. This significant increase would raise the possibility that the influence of robbery convictions is disproportionate to other violent crimes. Therefore, violent convictions were computed both with and without robbery. Table 14 shows that that a linear combination of social cognitive measures are slightly better postdictors of violence when robbery is included in the definition of violent crime than when it is omitted (Table 13). The combined equation accounts for 25.2% of the variance in violent convictions including robbery. However, as in the preceding equation, violence response preference and a composite variable measuring the selection

Table 14

Summary of the Hierarchical Regression of Processing Stages on Violent Criminal Convictions (Violent Convictions Including Robbery) (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			12.21**		
Step 1: Response Bias BIDR-Total	-.340	.066	-5.18**	.111	.115**
Step 2: Schema Violent Belief Inventory	.289	.070	4.10**	.175	.067**
Step 3: Encoding: Antagonist Recall	.193	.064	2.99**	.206	.035**
Step 4: Hostile Attribution Composite	.208	.075	2.78**	.231	.029**
Step 5: Hostile Goal Composite	.192	.085	2.25*	.246	.019*
Step 6: Violent Response Access	.178	.101	1.76	.254	.011
Step 7: Conflict Evaluation Composite	-.049	.089	.85	.252	.001

* $p < .05$

** $p < .01$

note:

Dependent Variable: The total number of violent convictions (including robbery)

Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
Hostile Attribution Composite	Hostile Attribution (standardized) + Provocation Appraisal (standardized)
Hostile Goal Composite	Hostile Goal (standardized) + Anger Control Appraisal (standardized)
Conflict Evaluation Composite	Best Response (standardized) + Violence Efficacy Appraisal (standardized)

of violence as the best response, failed to add to the postdiction.

Predicting Psychopathy

The correlations presented in an earlier section demonstrate that almost every feature and every stage of antagonistic processing is associated with psychopathy. Table 15 shows a summary of the hierarchical multiple regression when psychopathy is the dependent variable.

As shown in Table 15, the linear combination of social processing distortions accounts for 33.6% of the variance in the measure of psychopathy. Some of the processing measures do not contribute a significant amount of variance to this prediction. Specifically, the endorsement of violence as the best solution failed to add incremental predictive power. Thus, psychopathy is not only associated with an antagonistic processing style, but also specific social cognitions account for differences in the measurement of psychopathy. At the same time, it is apparent that psychopathy also includes elements that are not contained in the present notion of social information processing.

Table 15

Summary of the Hierarchical Regression of Processing Stages on Psychopathy (Hare Psychopathy Checklist - Revised Total Score) (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			18.54**		
Step 1: Response Bias BIDR-Total	-.273	.067	-4.06**	.070	.074**
Step 2: Schema Violent Belief Inventory	.319	.071	4.46**	.148	.082**
Step 3: Encoding: Antagonist Recall	.208	.065	3.18**	.185	.040**
Step 4: Hostile Attribution Composite	.375	.073	5.16**	.276	.093**
Step 5: Hostile Goal Composite	.208	.082	2.51*	.294	.022*
Step 6: Violent Response Access	.362	.095	3.81**	.339	.047**
Step 7: Conflict Evaluation Composite	.029	.084	.351	.336	.000

* $p < .05$

** $p < .01$

note:

Dependent Variable: Hare Psychopathy Checklist - Total Score

Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
Violent Belief =	Violent Belief Inventory
Hostile Attribution Composite	Hostile Attribution (standardized) + Provocation Appraisal (standardized)
Hostile Goal Composite	Hostile Goal (standardized) + Anger Control Appraisal (standardized)
Conflict Evaluation Composite	Best Response (standardized) + Violence Efficacy Appraisal (standardized)

Postdiction of Violence with Psychopathy and Social Cognition.

The sets of regression equations described in the preceding sections establish that the postdictive relationship between social cognition and violent crime is significant. However, the significant postdiction of psychopathy suggests that the postdictive utility of social cognitions may be overly optimistic.

The significant correlation of all social information processing variables with psychopathy introduces another viable explanation of violent criminal behavior. Psychopathy is a construct that has notable associations with violent history and violent recidivism. Given these associations, it is conceivable that social cognition is influenced by the co-occurrence of psychopathic traits. The previous postdictions of violent behavior may have been consequential because the variance postdicted by social cognition was attributable to psychopathy. Because psychopathy is an acknowledged postdictor of violent history, and because it represents enduring characteristics, it should enter first in postdictive equations. When psychopathy is entered before the social information processing variables, the incremental relevance of social cognition can be determined.

Table 16 displays the summary of the hierarchical regression of psychopathy and social information processing stages on the selection of a violent response (Violent Response Access). Each social information processing stage adds incremental validity to the prediction of a violent response preference beyond response bias and psychopathy. The regression equation presented in Table 16 is similar to a preliminary regression summarized in Table 10, except that psychopathy has been added to the equation. Both hierarchical regressions involve the prediction of Violent Response Access using a linear combination of social-cognitions. A comparison of Table 16 with Table 10 confirms that the addition of psychopathy marginally improves the predictive relationship (adjusted $\underline{R}^2$ improves from .72 to .73). Although the total prediction is slightly augmented, the incremental validity of independent social cognitive variable decreases when entered after psychopathy.

A similar result occurred when psychopathy and social cognitions combined to postdict self-reported violence. Table 17 shows the summary statistics of a hierarchical multiple regression with psychopathy entered before social cognitions to postdict the self-reported number of physical fights.

Table 16

Summary of the Hierarchical Regression of Psychopathy and Processing Stages on Violent Response Access (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)		1.03	-3.12**		
Step 1: Response Bias BIDR-Total	-.283	.067	-4.23**	.076	.080**
Step 2: Psychopathy PCL-R-Total	.523	.059	8.82**	.327	.253**
Step 3: Schema Violent Belief Inventory	.334	.062	5.34**	.407	.082**
Step 4: Encoding of Cues Antagonist Recall	.210	.055	3.80**	.443	.039**
Step 5: Interpretation Hostile Attribution	.247	.057	4.30**	.488	.046**
Step 6: Goal Clarification Hostile Goal	.416	.051	8.22**	.615	.126**
Step 7: Response Construction Hostile Responses	.440	.051	8.55**	.716	.100**
Step 8: Response Decision Best Response	.156	.046	3.36**	.730	.015**

* $p < .05$

** $p < .01$

note:

Dependent Variable: Violent Response Access

Independent (predictor) variable abbreviations:

BIDR Total = Balanced Inventory of Desirable Responding Total Score

PCL-R Total = Hare Psychopathy Checklist - Revised – Total Score

Violent Belief = Violent Belief Inventory

Table 17

Summary of the Hierarchical regression of Psychopathy and Processing Stages on Self-Reported Violence (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			15.18**		
Step 1: Response Bias BIDR-Total	-.355	.065	-5.41**	.122	.126**
Step 2: Psychopathy PCL-R-Total	.549	.056	9.79**	.399	.279**
Step 3: Schema Violent Belief Inventory	.395	.057	6.97**	.512	.115**
Step 4: Encoding: Antagonist Recall	.115	.051	2.23*	.522	.012*
Step 5: Hostile Attribution Composite	.196	.061	3.19**	.543	.023**
Step 6: Hostile Goal Composite	.202	.066	3.05**	.561	.020**
Step 7: Violent Response Access	.252	.078	3.22**	.580	.021**
Step 8: Conflict Evaluation Composite	-.031	.067	-.47	.579	.000

* $p < .05$

** $p < .01$

note:

Dependent Variable: The total number of physical fights (self-report)

Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
PCL-R Total =	Hare Psychopathy Checklist - Revised – Total Score
Hostile Attribution Composite	Hostile Attribution (standardized) + Provocation Appraisal (standardized)
Hostile Goal Composite	Hostile Goal (standardized) + Anger Control Appraisal (standardized)
Conflict Evaluation Composite	Best Response (standardized) + Violence Efficacy Appraisal (standardized)

Consistent with the earlier hierarchical regression on self-reported violence (Table 12), all but one social processing variable enhanced the postdiction. As before, the Conflict Evaluation Composite failed to improve the postdiction of self-reported violence. Thus, the linear postdiction is maintained even with psychopathy entered in the second step. The results of this equation are also comparable to the insertion of psychopathy in the prediction of a violent response preference (Table 16). When psychopathy is entered in the equation it marginally improves upon the predictive capacity of the linear aggregation but reduces the successive validity of each subsequent processing stage. The social cognitions still contribute to the postdiction but not as much as before.

Previous research has determined that psychopathy has an influential role in the postdiction of violent behavior (Hare & McPherson, 1984; Serin, Peters, & Barbaree, 1990). In the current study, two hierarchical regressions were employed to determine if social information processing stages improved the postdiction of violent criminal convictions beyond differences in psychopathy. A slight modification was made to the measurement of psychopathy to avoid unwanted redundancy between psychopathy and criminal

history. Two items of the Hare Psychopathy Checklist - Revised that may have an excessive influence on the history of violent crime were removed. Specifically, the items were a history of juvenile delinquency and criminal versatility (history of convictions across several categories of criminal behavior).

The first multiple regression concerned the postdiction of violent criminal convictions without the inclusion of robbery convictions. Table 18 summarizes this regression equation. As shown in Table 18, when response bias and psychopathy enter the regression equation, almost all of the social cognitions that follow on subsequent steps fail to postdict violent criminal convictions. The composite variable measuring the selection of a hostile goal is the only variable that significantly contributes to the postdiction. This equation is very different from an earlier regression that excluded psychopathy (Table 13). In the earlier equation, four of six social information processing stages added to the postdiction of violent crime. When psychopathy is entered before social cognitions, only one of six adds to the postdiction. This divergence is not a result of a redundancy between psychopathy and criminal convictions because criminal history items were removed from the measurement of psychopathy.

Table 18

Summary of the Hierarchical Regression of Psychopathy and Processing Stages on Violent Criminal Convictions (Violent Convictions Without Robbery) (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			10.70**		
Step 1: Response Bias BIDR-Total	-.306	.066	-4.16**	.089	.094**
Step 2: Psychopathy PCL-R-Total (minus criminal history items)	.447	.061	7.35**	.276	.189**
Step 2: Schema Violent Belief Inventory	.112	.069	1.63	.282	.009
Step 3: Encoding: Antagonist Recall	.073	.062	1.45	.283	.005
Step 4: Hostile Attribution Composite	.044	.077	.56	.281	.001
Step 5: Hostile Goal Composite	.168	.084	2.01	.291	.014*
Step 6: Violent Response Access	.070	.101	.69	.290	.002
Step 7: Conflict Evaluation Composite	-.051	.087	-.59	.287	.001

* $p < .05$

** $p < .01$

note:

Dependent Variable: Violent Criminal Convictions (Violent Convictions Without Robbery)

Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
PCL-R Total =	Hare Psychopathy Checklist - Revised – Total Score
Hostile Attribution Composite	Hostile Attribution (standardized) + Provocation Appraisal (standardized)
Hostile Goal Composite	Hostile Goal (standardized) + Anger Control Appraisal (standardized)
Conflict Evaluation Composite	Best Response (standardized) + Violence Efficacy Appraisal (standardized)

A similar result occurs when robbery is included in the measurement of violent convictions, though the relative contributions of social cognitions are dissimilar. Table 19 reveals the summary of the hierarchical multiple regression of psychopathy and social cognitions when violent convictions (including robbery) is the dependent variable.

Consistent with the postdiction of violent convictions without the inclusion of robbery, when robbery is included only one measure of social cognition adds to the postdiction. The violent belief inventory, a measure of hostile schema is the only measure of social cognition that adds incremental validity to the equation once response bias and psychopathy have been entered.

Table 19

Summary of the Hierarchical Regression of Psychopathy and Processing Stages on Violent Criminal Convictions (Violent Convictions Including Robbery) (n = 208)

Predictors	Standardized Coefficient (Beta)	Standard Error	t	Adjusted R^2	Change in R^2
(Constant)			12.21**		
Step 1: Response Bias BIDR-Total	-.340	.066	-5.18**	.111	.115**
Step 2: Psychopathy PCL-R-Total (minus criminal history items)	.522	.057	9.17**	.367	.258**
Step 3: Schema Violent Belief Inventory	.129	.064	2.01*	.376	.012*
Step 4: Encoding: Antagonist Recall	.101	.058	1.74	.382	.009
Step 5: Hostile Attribution Composite	.037	.071	.51	.380	.001
Step 6: Hostile Goal Composite	.109	.070	1.39	.383	.006
Step 7: Violent Response Access	.027	.095	.28	.380	.000
Step 8: Conflict Evaluation Composite	-.068	.081	-.83	.379	.002

* $p < .05$
** $p < .01$

note:
Dependent Variable: Violent Criminal Convictions (Violent Convictions Including Robbery)
Independent (predictor) variable abbreviations:

BIDR Total =	Balanced Inventory of Desirable Responding Total Score
PCL-R Total =	Hare Psychopathy Checklist - Revised – Total Score
Hostile Attribution Composite	Hostile Attribution (standardized) + Provocation Appraisal (standardized)
Hostile Goal Composite	Hostile Goal (standardized) + Anger Control Appraisal (standardized)
Conflict Evaluation Composite	Best Response (standardized) + Violence Efficacy Appraisal (standardized)

Discussion

This study was designed to examine the relationship between social cognitions and criminal violence in adults. It shows clear evidence that social cognitive distortions are associated with violent intentions, violent behavior, and a measure of psychopathy. The results support the proposal that an antagonistic and hostile style of processing social information is connected to the selection of violent responses to hypothetical social situations, real life violent behavior, and psychopathy. Furthermore, the association between processing distortions and violent response preference is significant when response bias, intellectual ability, and the current mood of the subject are statistically controlled.

The social information processing mechanisms that characterize aggressive children were used as a framework for this investigation. The general results of this study are consistent with Crick and Dodge's (1994) theoretical model of social information processing and behavioral competence. The current study adds support to previous investigations that have demonstrated social cognitive differences between aggressive and non-aggressive children and adolescents, and has extended this finding to adults convicted of violent crimes. The finding is important

because it shows that distortions of social cognitions are associated with serious criminal violence, whereas most developmental studies use third-person rankings of childhood aggression.

The results indicate that the selective attention to external and internal hostile cues, the attribution of hostile intentions and causality, the construction of punitive goals and aggressive responses, and a biased evaluation of those responses are each significantly associated with violent responding, violent behavior, and psychopathy. These variables were significantly inter-correlated. The inter-relationships between social information processing measures support Dodge and Crick's (1994) contention that the sequential stages are reciprocally related.

This study is one of the few to simultaneously evaluate each component of the social information-processing model and demonstrate the association of those components to multiple measures of violent behavior. Similarly, a social schema measured by generalized beliefs supporting violence was found to correlate with processing distortions, violent behavior, and psychopathy.

The results also support the theory that a hostile style is a central feature of the psychopathy construct

(Blackburn & Lee Evans, 1985; Hare, 1991). All of the social information processing variables significantly correlated with the Hare Psychopathy Checklist - Revised (with the exception of information requests). Regression equations demonstrated that antagonistic social cognitions explained a significant portion of the variance in psychopathy. The current study demonstrated that social cognitions were significant postdictors of self-reported and officially recorded violent behavior. However, when the postdiction includes psychopathy, the incremental utility of social cognition decreases substantially. This suggests a possible interaction between psychopathy, violence, and social cognition.

The social cognitive deficits and distortions associated with violence are not associated with a general inability to solve problems. The mechanisms underlying hostile interpretations and aggressive solutions are not linked to an impoverished capacity to think intelligently. The lack of association between the measures of social cognitive distortion and general cognitive functioning precludes a possible alternative interpretation that those who respond violently do so because a general cognitive deficiency prevents them from responding appropriately.

Similarly, the general mood of the subject did not influence the endorsement of beliefs or social cognitions. This finding should be interpreted cautiously. This is not to say that emotional arousal has nothing to do with social cognitive distortions or violent behavior. The significant and strong correlation between anger appraisal and all of the dependent measures suggests that emotional arousal plays a crucial role. Rather, the measure of state anger used in this study controlled for the possibility that some factor outside of the testing situation may have made subjects angry and therefore interfered with the assessment. For example, if a participant had been insulted moments before showing up for the interview, and had been angered by this insult, it would have been difficult to assess the impact of that arousal on his responses. The hypothetical situations were not provocative and were presented by nice people in a non-threatening environment. In a real situation one would expect that arousal would play a very significant role in the response.

Although the results provide substantial support for the general hypothesis that particular distortions in information processing are associated with violent behavior, some results failed to meet expectations. The first inconsistency was at the encoding stage of the social

information-processing model. Aggressive children when compared to non-aggressive children seek out less information about the problem (Dodge & Newman, 1981). In this study, the request for more information about the hypothetical situation was not related to cognitive processing distortions, violent behavior or psychopathy.

It was expected that there would be an inverse association between the request for more information and each measure of violence. The request for more information was assessed in the interview by asking the participants if they wanted more information about the situation; however, this request went unanswered. In order to insure that a standard version of the situation was presented to all subjects, the research assistant only noted the request for more information, and did not provide any additional descriptions. This technique may have discouraged further requests once it became apparent that more information was not forthcoming. Therefore, it is difficult to conclude if information seeking is unrelated to violent processing or if the design of the measure prevented this association.

In studies of aggressive children, a common finding is that they generate fewer solutions to problem situations in comparison to controls. In the current study, a different result was found. Violent Response Access and measures of

violent behavior were significantly positively correlated with the total number of responses to the situation. This was not expected, but makes sense. The higher rate of solutions may have occurred because the method of coding the total number of solutions included aggressive and inappropriate solutions. Violent respondents have a larger repertoire of solutions because they do not rule out violent and aggressive options.

Study Limitations

Several methodological considerations limit the generalizability of the results. It is impossible to conclude from the current investigation that violence results from social cognitive distortions. The correlational design of this study prevents the determination that a causal relation exists between processing distortions and violence. As with all correlational designs, it is equally likely that unidentified constructs are responsible for the association.

The setting of the current study is a potential deficiency related to causality. It is possible that the processing distortions of violent offenders are exacerbated in an institutional setting and may dissipate upon return to a less restrictive environment. An argument can be made that all of the participants in this study were criminal

offenders living in similar environments, and therefore the influential effects of the environment were controlled. However, this control may be insufficient. It is possible that violent offenders are more influenced by the institutional setting than non-violent offenders. For example, an offender labeled as violent might use any instance, including a confidential interview, to reflect that label. Further research is needed to assess the influence of social cognitions in different settings.

The geographical location of the current study may also limit the generalization of the findings. It is possible that social cognitions and violence are associated with culture and nationality. Though the current study included participants of diverse cultures and countries of origin, the great majority of the participants were white Canadian English speaking males. Additional research is required to determine if the associations reported in this study can be generalized to other populations.

Several limitations of the assessment methods used in this study must also be noted. The principle limitation is that hypothetical situations were employed to measure processing distortions. Such situations are artificial and may not be relevant to actual social situations. Although developmental research has demonstrated a consistency in

processing of hypothetical situations and real life situations (Steinberg & Dodge, 1983), there is some evidence to question the validity of responses to hypothetical vignettes (Vitaro & Pelletier, 1991). Of course, exposing criminals, especially violent criminals, to real provocation would be unethical and dangerous. However, future researchers may devise safe and respectable methods of adapting laboratory tasks to the study of social information processing.

Another limitation of the measures used in this study involves the assessment of violence. Aggression and violence are related concepts that are difficult to define and measure accurately. Standard definitions of both have been proposed but not widely accepted. This study attempted to circumvent definitional controversy by employing several measures of violence. Each of these determinations has complications. Memory, impression management, self-awareness, and subjective definitions could limit self-reported violence. Officially recorded violence is influenced by each stage of the criminal justice system, including detection, apprehension, arrest decision, conviction, plea bargaining, and sentencing. Psychopathy is associated with violence but is not a measure of violence, and because the measurement of psychopathy is somewhat

dependent on a history of criminal behavior it has similar measurement limitations. Therefore, it is possible that this study employed inadequate indicators of violent behavior.

An additional limitation concerns the measurement of response bias. The significant inverse correlations between measures of response bias and almost all of the variables in this study raises the possibility that standard social desirability measures may be inappropriate for a criminal population. Measures of response bias are developed on the assumption that the respondents are attempting to make a good impression by endorsing culturally acceptable norms. But what if a person's cultural norms are antisocial; in this case the test of response bias may be a measure of deviancy. This is suggested by the finding that significant negative correlations exist between the Balanced Inventory of Desirable Responding and measures of antisocial behavior that are independent of self-reporting. Forensic research would benefit substantially from a structured scale measuring deception and response bias that is not associated with antisocial behavior and attitudes.

Implications

Despite its limitations, the findings of this study have implications for the assessment, prevention, and treatment of violent behavior.

Assessment implications

The results of this study have several implications for the assessment of social cognition. The first derives from the finding that the association between violence and social cognition holds true both when respondents appraise themselves on a constrained five-point scale or when experimenters code open responses to interview questions. Each assessment method has advantages, but the findings of this study suggest that both techniques are valid.

The advantage of participant appraisals on constrained scales is that the items are easy to administer and easy to interpret. The disadvantage is that the items constrain the response. The advantage of an open-ended question is that it does not influence the respondent to answer in a particular way. The disadvantages are that experimenter interpretation introduces a potential source of bias. Open-ended responses require time to interview subjects, code responses, and establish interrater reliability. A combined approach such as the one used in this study may be optimal to offset the disadvantages of either method.

The current study may aid future researchers interested in the link between violence and personality. The connection is suggested by the finding that psychopathy measures are associated with social cognitive deficits. The deficits that contribute to the prediction of violence account for a substantial amount of variance in the measurement of psychopathy, supporting Blackburn and Lee-Evans' (1985) contention that antagonistic attributions are a central feature of psychopathy. It is possible that the assessment of processing distortions can augment the measurement of psychopathy. The assessment implications are important because social cognitions may change over time and situation, adding a dynamic component to a personality construct that is mainly measured by static and unchanging indicators.

Another possibility is that the developmental researchers studying aggressive children and adolescents are also studying young psychopaths. There is considerable evidence that the psychopathy construct is a taxon, evident at an early age (Harris, Rice, & Quinsey, 1994). Recent advances in the assessment of psychopathy have traced this construct to children (see Lilienfeld, 1998 for a review). Given the current findings of a strong association between social cognitive distortions and a measure of psychopathy,

it is plausible that some of the subjects in developmental studies possessed early indicators of criminal personality. Only longitudinal research can establish the persistence of cognitive deficits, aggression, and psychopathy. However, the current findings suggest that researchers who study the processing style of aggressive children should also consider a broader range of conduct difficulties and the childhood markers of psychopathy.

A third implication relates to the measurement and management of response bias. Response biases are significantly associated with processing distortions, violent behavior, and psychopathy, and the desire to make a good impression was inversely correlated with all of the latter measures. While the participants who preferred violent solutions probably had little reason to endorse socially desirable responses, those who did not respond violently may have been attempting to make a good impression. This is the first study that has included a measure of response style in the assessment of hostile social cognitions. Future research involving social cognition and criminal violence would profit from the consideration of the influences of response bias. As mentioned earlier, it would be important to differentiate

the overlapping construct of social desirability (or antisocial desirability) and deceptive responding.

Future research efforts would also benefit from a standard procedure to assess and examine the social cognitions associated with violence. Most studies in the literature exploring social cognitions rely on unique measures developed for a singular investigation. The present study shares this liability. Without a recognized standard metric, comparisons across social information processing studies and different populations will remain problematic.

Prediction implications

One method that may advance the assessment of social cognition would involve a systematic investigation of the situations that are problematic for violent criminals. A restricted range of hypothetical situations that were intentionally ambiguous with respect to outcome and provocation limited the current study. A better understanding of the environmental and situational antecedents of violent crime might contribute to a more applicable assessment of violent behavior and social cognition.

Future investigations could apply this information to the delineation of different "types" of violent offenders. Typology research is important because it may help advance

predictions of future violence by forecasting high-risk situations.

The prediction of violent recidivism is an area that may be advanced by additional research involving social information processing distortions. It is plausible that a periodic assessment of antagonistic social cognitions based on environmentally relevant provocation may contribute to the prediction of violent crime. Support for this assumption comes from meta-analytic studies that have identified criminal attitudes as a valid predictor of future crime (Gendreau, Little, & Goggin, 1996). Palmer (1997) demonstrated that measures of coping in combination with measures of psychopathy and prison conduct significantly predicted violent recidivism.

Additional support for attitudinal predictors can be found in a study of mentally disordered offenders. Quinsey, Coleman, Jones, and Altrows (1997) differentiated patients who reoffended violently from matched controls using a set of procriminal attitudes and behaviors. The set of "dynamic antisociality" factors separated violent recidivists from controls even after actuarial risk had been considered. In addition, the factors distinguished the period immediately preceding reoffense from an earlier period.

The attitudes and behaviors that differentiated violent recidivists in the Quinsey et al. study are conceptually similar to the antagonistic social cognitions measured in the current study. A follow-up to the current study will investigate the possibility that processing deficits may add to the actuarial prediction of violent behavior. The promise of a dynamic prediction approach is the enhancement of actuarial estimation by identifying the individual and contextual factors that precede violent recidivism. This identification can then contribute to violent risk management strategies.

Prevention implications

Prediction can lead to prevention and the current findings have clinical implications for the treatment and management of violent behavior. At the start of this dissertation it was mentioned that violent crime is a public health problem in North America. This statement not only reflects the severity of the problem but also offers a prescription for prevention. Public health approaches address social problems as though they were medical epidemics by focusing on groups as well as individuals. The underlying assumptions of those who adopt a public health approach is that violence can be prevented by a systematic combination of detection, education, social policy, and

intervention. Public health problems are typically addressed by multiple disciplines and usually operate at three phases of prevention.

The primary phase of prevention is education. At this phase all members of society are exposed to information about how to prevent violence. Educating at-risk populations are a priority. The developmental literature suggests that basic social proficiency skills would be a useful intervention for school aged children (Eargle, Guerra, & Tolan, 1994). Education could also target at-risk populations, such as children living in neighborhoods with high rates of violence or children exposed to marital conflict and parental abuse.

The current study suggests that criminal offenders who have not been convicted of a violent crime exhibit social processing distortions. It is possible that these criminals will lead successful lives upon release, but it is also a possibility that processing deficits may interfere with successful reintegration into the community (Zamble & Porporino, 1988). Non-violent offenders could benefit from a brief education package that promotes effective social problem-solving skills. Information and education designed to promote social competence is not an intrusive prescription.

Secondary prevention consists of delivering brief intervention to high-risk populations. For medical interventions, this means treating individuals who already manifest symptoms of the disease or engage in behaviors that will promote a disease. Several studies mentioned in the review of the literature have concluded that social processing deficits are evident in delinquent youths that have committed serious acts of aggression (Slaby & Guerra, 1988). It may be possible to offer moderate intensity interventions to delinquent youths that are at risk for escalating their criminal careers to serious violent crimes. Fortunately, there are numerous techniques and psychosocial skill interventions that have been developed for delinquent adolescent populations (Aber, Brown, Chaudry, Jones, & Samples, 1996; Guerra & Slaby, 1990). Incorporating a treatment component designed to promote an appropriate and effective information processing style may benefit violence prevention efforts.

The current study has implications for secondary prevention for criminal adults. In recent years, forensic researchers have considerably advanced the prediction of violence (Gendreau, Goggin, & Paparozzi, 1996; Harris, & Rice, 1997). Though violent recidivism cannot be predicted with absolute certainty, actuarial measures enable a

prediction that improves over chance. Criminal offenders who present a moderate risk of future violence and who have demonstrated an episodic history of aggression or violence may benefit from a moderate intensity intervention that promotes effective social problem solving, objective processing, and effective coping.

Secondary prevention promotion indicates a triage approach to the assessment of adult social competence. New offenders who enter the prison system could complete a brief inventory to measure social competence and processing deficits. Offenders who show deficits on those tests or those who have a history of violent crime and at least a moderate level of recidivism risk, could participate in a more thorough assessment. The prescription for clinical intervention would be based on an assessment of social cognitive need.

This assessment approach leads to the third and final phase of public health promotion. Tertiary prevention is aimed at treating individuals who have the disease and are at risk for communicating the disease. In the application to early intervention, aggressive children and adolescents may benefit from multi-systemic interventions and long term maintenance to prevent life-course persistent violence

(Borduin, Mann, Cone, Henggeler, Fucci, Blaske, & Williams, 1995).

Adult criminal offenders who present a high risk for violent recidivism may also benefit from an intensive intervention with appropriate follow-up. The current study suggests that effective social information processing and cognitive restructuring could assist tertiary prevention efforts. A promising finding of this study is the endorsement of violence as the best solution to social dilemmas was infrequently endorsed and rarely postdictive. Furthermore, the endorsement of violence and previous violent behavior was positively associated with the recognition that the participant would not handle the situations well. This result can be interpreted as an opportunity for intervention because most offenders recognize that violence is not the best solution to social problems and seem able to distinguish effective solutions from ineffective ones.

An intensive level of correctional rehabilitation could include clinical strategies that have already been developed and applied successfully to diverse clinical populations. Social problem solving therapy adapted to ameliorate the social cognitive distortions highlighted in this study is a technique that holds promise. Cognitive

restructuring may be useful to challenge and modify the antagonistic schemas of violent criminals. Neither of these techniques may prove sufficient and clearly more research would be required to determine the efficacy of these interventions.

Research implications

Future research involving the cognitive antecedents to violent crime would benefit from a design that examines a cause and effect relationship. In this context, longitudinal studies that identify early risk markers for adult violence are needed to establish treatment targets. Longitudinal research should examine the origins of social-cognitive distortions. Currently, a considerable amount of research indicates that harsh discipline, parental abuse, and parental attributions are associated with aggression and processing deficits in children (Dodge et al., 1990; Dodge, Pettit, Bates, & Valente, 1998; Spaccarelli et al., 1995). These investigations should also attempt to explain other possible origins such as biological predisposition, attention deficits, emotional dysregulation and impulsive behavioral styles. Causal research designs would help connect the development of processing deficits to the expression of violent behavior throughout the lifespan.

Finally, more research is needed to explore the existence of antagonistic schemas. The current study proposes that a particular style of schematic processing is evident in violent adult offenders. It has been demonstrated that antagonistic schemas are associated with psychopathy, an enduring personality trait. This investigation limited the measurement of schematic processing to select social information processing variables and beliefs supportive of aggression. Future research could define additional components of an antagonistic schema. One possible component involves the attitudes and relative influence of social groups and intimates. Another suggestion for schema research might comprise the endorsement of a code of proscribed deviancy and sub-cultural norms for violence. Similarly, schematic processing may depend on a lack of empathy or consideration for others and a self-identification with autonomy and rebellion.

Concluding Remarks

As is probably true of most investigations, the current study raises more questions than it answers. However, the current study does answer some questions. All of the major components of social information processing were associated with a violent response preference, self-reported violent behavior, official convictions for violent

crimes, and psychopathy. Measures of violence were consistently correlated with antagonistic and hostile social cognitions and inversely associated with prosocial cognitions. Furthermore, social cognitive distortions combined as valid predictors of response preference, self-reported violence, criminal convictions, and psychopathy.

This study is the first multivariate study that examines each stage of social information processing in the simultaneous prediction of serious violent crime. This study advances the understanding of social information processing and social competency by demonstrating particular distortions and biases associated with adult criminal violence and psychopathy.

References

Aber, J.L., Brown, J.L., Chaudry, N., Jones, S.M., & Samples, F. (1996). The Evaluation of the Resolving Conflict Creatively Program: An overview. American Journal of Preventive Medicine, 12, 82-90.

Akhtar, N., & Bradley, E. J. (1991) Social information processing deficits of aggressive children: Present findings and implications for social skills training. Clinical Psychology Review , 11, 621-644

Andrews, D. A., & Bonta, J. (1994). The psychology of criminal conduct. Cincinnati, OH: Anderson Publishing.

Asarnow, J. R., & Callan, J.W. (1985). Boys with peer adjustment problems: Social cognitive processes. Journal of Consulting & Clinical Psychology, 53, 80-87.

Bandura, A. (1977). Social learning theory. Englewood Cliffs. NJ: Prentice Hall.

Bandura, A. (1983). Psychological mechanisms of aggression. In R.G. Geen, & E.I. Donnerstein. (Eds.), Aggression - Theoretical and Empirical Reviews, Volume 1. (pp. 1-35) London: Academic Press, Inc.

Bergstein, J.M., Hemenway, D., Kennedy, B., Quaday, S., & Ander, R. (1996). Guns in young hands: A survey of urban teenagers' attitudes and behaviors related to handgun violence. Journal of Trauma, 41(5), 794-798.

Berkowitz, L. (1983), The experience of anger as a parallel process in the display of impulsive, "angry" aggression. In R.G. Geen, & E.I. Donnerstein. (Eds.), Aggression - theoretical and empirical reviews, Volume 1. (Pp. 103-131). London: Academic Press, Inc.

Bettman, M.D. (1993) Social problem-solving appraisal in a criminal population. Unpublished Master's Thesis. Queen's University. Kingston, Canada.

Bickett, L.R., Milich R., & Brown R.T. (1996). Attributional styles of aggressive boys and their mothers. Journal of Abnormal Child Psychology, 24(4), 457-472.

Blackburn, R. (1993). The psychology of criminal conduct: theory, research, and practice. West Sussex, England: John Wiley & Sons.

Blackburn, R., & Lee-Evans, J.M. (1985). Reactions of primary and secondary psychopaths to anger-evoking situations. The British Journal of Clinical Psychology, 24(Pt 2), 93-100.

Borduin C.M., Mann B.J., Cone L.T., Henggeler S.W., Fucci B.R., Blaske D.M., & Williams R.A. (1995). Multisystemic treatment of serious juvenile offenders: long-term prevention of criminality and violence. Journal of Consulting and Clinical Psychology, 63(4), 569-578.

Cleckley, H. (1976). The Mask of Sanity. (Sixth Edition ed.). St. Louis: Mosby.

Copello, A.G., & Tata, P.R. (1990). Violent behaviour and interpretative bias: An experimental study of the resolution of ambiguity in violent offenders. British Journal of Clinical Psychology, 29(4), 417-428.

Costanzo, P.R., Grumet, J.F., & Brehm, S.S. (1974). The effects of choice and source of constraint on children's attributions of preference. Journal of Experimental Social Psychology, 10, 352-364.

Cotton, N.U., Resnick, J., Browne, D.C., Martin, S. L., McCarraher, D. R., & Woods, J. (1994). Aggression and fighting behavior among African-American adolescents: individual and family factors. American Journal of Public Health, 84(4), 618-622.

Crick, N.R. & Dodge, K.A. (1994) A review and reformulation of social information-processing mechanisms in children's social adjustment. Psychological Bulletin 115, 74-101.

Crick, N.R., & Dodge, K.A. (1989). Children's perception of peer entry and conflict situations: Social strategies, goals, and outcome expectations. In B. Schneider, J. Nadel, G. Attili, & R. Weissberg (Eds.), Social competence in developmental perspective. (Pp. 396-399).

Crick, N.R., & Ladd, G.W. (1990). Children's perceptions of the outcomes of aggressive strategies: Do the ends justify being mean? Developmental Psychology, 26, 612-620.

Deluty, R.H. (1983). Children's evaluation of aggressive, assertive, and submissive responses. Journal of Clinical Child Psychology, 12, 124-129.

Dodge, K.A. (1980). Social cognition and children's aggressive behavior. Child Development, 51(1), 152-170.

Dodge, K.A. (1986). A social information processing model of social competence in children. In M Perlmutter (Ed.), The Minnesota Symposia on Child Psychology: Vol, 18. Cognitive perspectives on children's social and behavioral development. Hillsdale, NJ: Erlbaum.

Dodge, K.A. (1993). Social-cognitive mechanisms in the development of conduct disorder and depression. Annual Review of Psychology, 44, 559-584.

Dodge, K.A., Bates, J.E., & Pettit, G.S. (1990). Mechanisms in the cycle of violence. Science, 250(4988), 1678-1683.

Dodge, K.A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. Journal of Personality & Social Psychology, 53(6), 1146-1158.

Dodge, K.A., & Frame, C.L. (1982). Social cognitive biases and deficits in aggressive boys. Child Development, 53(3), 620-635.

Dodge, K.A., Murphy, R.R., & Buchsbaum, K. (1984). The assessment of intention-cue detection skills in children: Implications for developmental psychopathology. Child Development, 55(1), 163-173.

Dodge, K.A., & Newman, J.P. (1981). Biased decision-making processes in aggressive boys. Journal of Abnormal Psychology, 90(4), 375-379.

Dodge, K.A., Pettit, G.S., Bates, J.E., & Valente, E. (1998). Social information-processing patterns partially mediate the effect of early physical abuse on later conduct problems. Journal of Abnormal Psychology, 104(4), 632-643.

Dodge, K.A., Petit, G.S., McClaskey, C.L., & Brown, M.M. (1986). Social Competence in children. Monographs of the Society for Research in Child Development, 51, (No. 213)

Dodge, K.A., Price, J.M., Bachorowski, J., & Newman, J.P. (1990). Hostile attributional biases in severely aggressive adolescents Journal of Abnormal Psychology, 99, 385-392.

Dodge, K.A., & Somberg, D.R. (1987). Hostile attributional biases among aggressive boys are exacerbated under conditions of threats to the self. Child Development, 58(1), 213-224.

Dodge, K.A., & Tomlin, A.M. (1987). Utilization of self-schemas as a mechanism of interpersonal bias in aggressive children. Social Cognition, 5, 280-300.

Dutton, D.G., & Browning, J.J. (1998). Concern for power, fear of intimacy, and aversive stimuli for wife assault. In G. T. Hotaling, D. Finkelhor, J. T. Kirkpatrick, & M. A. Straus (Eds.), Family abuse and its consequences: New directions in research. Beverly Hills: Sage.

Dutton, D.G., & Hemphill, K.J. (1992). Patterns of socially desirable responding among perpetrators and victims of wife assault. Violence and Victims, 7(1), 29-39.

D'Zurilla, T.J., & Goldfried, M.R. (1971). Problem-solving and behavior modification. Journal of Abnormal Psychology. 78, 107-126.

Eargle, A.E., Guerra, N.G., & Tolan, P.H. (1994). Preventing aggression in inner-city children: Small group training to change cognitions, social skills, and behavior. Journal of Child and Adolescent Group Therapy, 4(4), 229-242.

Farrington, D.P. (1989). Early predictors of adolescent aggression and adult violence. Violence and Victims, 4(2), 79-100

Feldman, E., & Dodge, K.A. (1987). Social information processing and sociometric status: sex, age, and situational effects. Journal of Abnormal Child Psychology, 15(2), 211-227.

Fondacaro, M.R., & Heller, K. (1990). Attributional style in aggressive adolescent boys. Journal of Abnormal Child Psychology, 18(1), 75-89.

Gendreau, P.L., Goggin, C., & Paparozzi, M. (1996). Principles of effective assessment for community corrections. Federal Probation, 60(3), 64-70.

Gendreau, P., Little T., & Goggin, C. (1996). A meta-analysis of the prediction of adult offender recidivism: What works! Criminology, 34, 575-607.

Goldfried, M.R., & D'Zurilla, T.J. (1969). A behavioral-analytic model for assessing competence. In C. D. Spielberger (Ed.), Current topics in clinical and community psychology. (Pp. 151-198).

Gouze, K.R. (1987). Attention and social problem solving as correlates of aggression in preschool males. Journal of Abnormal Child Psychology, 15(2), 181-197.

Guerra, N. G., Huesmann, L.R., Tolan, P. H., Van Acker, R., & Eron, L.D. (1995). Stressful events and individual beliefs as correlates of economic disadvantage and aggression among urban children. Journal of Consulting & Clinical Psychology, 63(4), 518-528.

Guerra, N.G., Huesmann, L.R., & Zelli, A. (1990). Attributions for social failure and aggression in incarcerated delinquent youth. Journal of Abnormal Child Psychology, 18(4), 347-355.

Guerra, N.G., & Slaby, R.G. (1989). Evaluative factors in social problem solving by aggressive boys. Journal of Abnormal Child Psychology, 17(3), 277-289.

Guerra, N.G., & Slaby, R.G. (1990). Cognitive mediators of aggression in adolescent offenders: 2. Intervention. Developmental Psychology, 26, 269-277

Hains, A. A., & Herrman, L. P. (1989). Social cognitive skills and behavioural adjustment of delinquent adolescents in treatment. Journal of Adolescence, 12(3), 323-328.

Hare, R.D. (1991). The Hare Psychopathy Checklist - Revised Manual. Toronto: Multi-Health Systems.

Hare, R.D. & McPherson, L.M. (1984). Violent and aggressive behaviour by criminal psychopaths. International Journal of Law and Psychiatry, 7, 35-40

Harris G.T., & Rice M.E. (1997). Risk appraisal and management of violent behavior. Psychiatric Services, 48(9), 1168-1176.

Harris, G.T., Rice, M.E., & Cormier, C.A. (1991). Psychopathy and violent recidivism. Law and Human Behavior, 15, 625-637.

Harris, G.T., Rice, M.E., & Quinsey, V.L. (1994). Psychopathy as a taxon: evidence that psychopaths are a discrete class. Journal of Consulting & Clinical Psychology, 62(2), 387-397.

Hart, S.D., Kropp, P.R., & Hare, R.D. (1988). Performance of male psychopaths following conditional release from prison. Journal of Consulting and Clinical Psychology, 56, 227-232.

Hart, C.H., Ladd, G.W., & Burelson, B. (1990). Children's expectations of the outcomes of social strategies: Relations with sociometric status and maternal disciplinary styles. Child Development, 61, 127-137.

Holtzworth-Munroe, A., & Anglin, K. (1991). The competency of responses given by maritally violent versus nonviolent men to problematic marital situations. Violence and Victims, 6(4), 257-269.

Holtzworth-Munroe A., & Smutzler N. (1996). Comparing the emotional reactions and behavioral intentions of violent and nonviolent husbands to aggressive, distressed, and other wife behaviors. Violence and Victims, 11(4), 319-339.

Huesmann, L.R. (1988). An information processing model for the development of aggression. Aggressive Behavior, 14, 13-24.

Huesmann, L.R., Eron, L.D., & Yarmel, P.W. (1987). Intellectual functioning and aggression. Journal of Personality & Social Psychology, 52(1), 232-240.

Huesmann, L.R., Eron, L.D., Lefkowitz, M. N., & Walder, L.O. (1984). Stability of aggression over time and generations. Developmental Psychology, 20, 1120-1134.

Hughes, J.N., Robinson, M. S., & Moore, L. A. (1991). Children's attributions for peers' positive behaviors: social status differences. Journal of Abnormal Child Psychology, 19(6), 645-657.

Intagliata, J.C. (1978). Increasing the interpersonal problem solving skills of an alcoholic population. Journal of Consulting and Clinical Psychology, 46, 489-498.

Kendall, P.C., and MacDonald, J.P. (1993). Cognition in the psychopathology of youth and implications for treatment. In K.S. Dobson, & P.C. Kendall, (Ed.), Psychopathology and cognition. (Pp. 387-427). London: Academic Press.

Kroner, D.G., & Weekes, J.R. (1996a). Socially desirable responding and offence characteristics among rapists. Journal of Research in Childhood Education, 11(3), 263-270.

Kroner, D.G., & Weekes, J.R. (1996b). Balanced Inventory of Desirable Responding: Factor structure, reliability, and validity with an offender sample. Personality and Individual Differences, 21(3), 323-333.

Lilienfeld, S.O. (1998). Methodological advances and developments in the assessment of psychopathy. Behavior Research Therapy, 36, 99-125.

Lochman, J.E., & Dodge, K. A. (1994). Social-cognitive processes of severely violent, moderately aggressive, and nonaggressive boys. Journal of Consulting & Clinical Psychology, 62(2), 366-374.

Lochman, J.E., & Lampron, L.B. (1986). Situational social problem-solving skills and self-esteem of aggressive and nonaggressive boys. Journal of Abnormal Child Psychology, 14(4), 605-617.

Lochman, J.E., Lampron, L.B., & Rabiner, D.L. (1989). Format differences and salience effects in the social problem-solving assessment of aggressive and nonaggressive boys. Journal of Clinical Child Psychology, 18(3), 230-236.

Loeber, R., & Stouthamer-Loeber, M. (1998). Development of juvenile aggression and violence. Some common misconceptions and controversies. American Psychologist, 53(2), 242-259.

May, J.M. (1986). Cognitive processes and violent behaviour in young people. Journal of Adolescence, 9(1), 17-27.

McFall, R.M. (1982). A review and reformulation of the concept of social skills. Behavioral Assessment, 4, 1-33.

Milich, R., & Dodge, K.A. (1984). Social information processing in child psychiatric populations. Journal of Abnormal Child Psychology, 12(3), 471-489.

Miranda, J., Persons, J.B., & Nix Byers, C. (1990). Endorsement of dysfunctional beliefs on current mood state. Journal of Abnormal Psychology, 99, 237-241

Nasby, W., Hayden, B., & DePaulo, B.M. (1980). Attributional bias among aggressive boys to interpret unambiguous social stimuli as displays of hostility. Journal of Abnormal Psychology, 89(3), 459-468.

Olweus, D. (1984). Aggressors and their victims: Bullying at school. In N. Frude & H. Gault (Eds.), Disruptive behavior in schools. (Pp. 57-76). New York: Wiley.

Paulhus, D. L. (1994). Balanced inventory of desirable responding: Reference manual for BIDR version 6

Perry, D.G., Perry, L.C., & Rasmussen, P. (1986). Cognitive social learning mediators of aggression. Child Development, 57(3), 700-711.

Quiggle, N.L., Garber J., Panak W.F., & Dodge K.A. (1992). Social information processing in aggressive and depressed children. Child Development, 63(6), 1305-1320.

Quinsey, V.L., Coleman, G., Jones, B., & Altrows, I. (1997). Proximal antecedents of eloping and reoffending among supervised mentally disordered offenders. Journal of Interpersonal Violence, 12(6), 794-813.

Richard, B.A., & Dodge, K.A. (1982). Social maladjustment and problem solving in school-aged children. Journal of Consulting & Clinical Psychology, 50(2), 226-233.

Rumelhart, D.E., McClelland, J.L., and the Parallel Distributed Processing (PDP) Research Group (1986). Parallel distributed processing Exploration in the microstructure of cognition. Vol. 1: Foundations. Cambridge, MA: MIT Press/Bradford Books.

Sancilio, F. M., Plumert, J.M., & Hartup, W.W. (1989). Friendship and aggressiveness as determinants of conflict outcomes in middle childhood. Developmental Psychology, 25, 812-819.

Schultz, L.H., Yeates, K. O. & Selman, R.L. (1989) The Interpersonal Negotiation Strategies (INS) Interview: A Scoring Manual. Cambridge MA: Harvard Graduate School of Education, The Group for the Study of Interpersonal Development.

Seager, J.A. (1996). Violent men: The importance of cognitive schema and impulsivity. Unpublished Dissertation. Queen's University, Kingston, Canada;

Serin, R.C. (1993). Psychopathy and violence in prisoners. Unpublished Ph.D. thesis. Unpublished Dissertation. Queen's University, Kingston, Canada;

Serin, R.C. (1991). Psychopathy and violence in criminals. Journal of Interpersonal Violence, 6, 423-431

Serin, R.C., Peters, R.D., & Barbaree, H.E. (1990). Predictors of psychopathy and release outcome in a criminal population. Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2, 419-422.

Shank, R.C., & Abelson, R. (1977). Scripts, plans, goals, and understanding. Hillsdale, NJ: Erlbaum.

Slaby, R.G., & Guerra, N.G. (1988). Cognitive mediators of aggression in adolescent offenders: 1. Assessment. Developmental Psychology, 24, 580-588.

Spaccarelli, S., Coatsworth, J. D., & Bowden, B. S. (1995). Exposure to serious family violence among incarcerated boys: Its association with violent offending and potential mediating variables. Violence and Victims, 10(3), 163-182.

Spielberger, C.D. (1988). State-Trait Anger Expression Inventory; Research Edition. Professional Manual. Odessa: FL. Psychological Assessment Resources Inc.

Spivack, G., & Shure, M. B. (1974). Social adjustment of young children: A cognitive approach to solving real life problems. San Francisco: Jossey-Bass.

Spivack, G., Platt, J., & Shure, M. (1976). The problem-solving approach to adjustment. San Francisco: Jossey-Bass.

Steinberg, M.D., & Dodge, K.A. (1983). Attributional bias in aggressive adolescent boys and girls. Journal of Social and Clinical Psychology, 1, 312-321.

Vitaro, F., & Pelletier, D. (1991). Assessment of children's social problem-solving skills in hypothetical and actual conflict situations. Journal of Abnormal Child Psychology, 19(5), 505-518.

Waas, G. A. (1988). Social attributional biases of peer-rejected and aggressive children. Child Development, 59(4), 969-975

Wong, S. (1984). Criminal and institutional behaviors of psychopaths. Programs Branch Users Report. Ottawa Canada: Ministry of the Solicitor General.

Wood, R.W., Conn, D.C., & Harrison, H. D. (1977). The efficacy of using Shipley-Hartford scores to predict WAIS IQ in a penal population. Quarterly Journal of Corrections, 1, 39-41.

Yeates, K. O., Schultz, L.H., and Selman, R.L. (1990). Bridging the gaps in child-clinical assessment: Toward the application of social-cognitive developmental theory. Clinical Psychology Review, 10, 567-588

Zachary, R.A. (1994). Shipley Institute of Living Scale: Revised Manual. Western Psychological Services. Los Angeles, California.

Zamble, E., & Porporino, F.J. (1988). Coping, behavior, and adaptation in prison inmates. New York: Springer-Verlag.

Zillman, D. (1983) Arousal and Aggression. In R.G. Geen, & E.I. Donnerstein. (Ed.) Aggression - Theoretical and Empirical Reviews, Volume 1. (Pp. 75-97). London: Academic Press, Inc.

Social Problem Interview

Interviewer reads aloud:
The following situations, or events similar to them, sometimes happen to people on the street. After you have listened to each situation, I would like to find out how you would react to them. Please try to imagine that the situation is happening to you, and answer the questions according to how you think you would react, not how you should react.

Situation #1

Hand out the sheet describing the written version of this situation, then read the following out loud:

You borrowed money from some guy named John who has been hanging around you lately. Mostly the money was spent on stuff that both of you did together (like rounds of drinks at the bar, or a party that you both put on for friends). One day John demands his money back, with interest, furthermore he wants it right away. When John lent you the money he did not say that he wanted extra back, or when he wanted it returned.

S1R1. ***Interviewer:*** **"If this situation happened to you, what is the first thing you would do?"**

Open Response #1 (*write down response*):

Variable Label [illegible]	Variable Name [illegible]	Scoring Guidelines [illegible]
First Response (S1)	S1R01YN	Violence=1 / Everything else=0

SCORING GUIDELINES FOR VIOLENCE RATING	
SXR01YN -	Violence is defined as any physical aggressive act. Direct physical contact [illegible]
SXR05YN -	Includes clearly implied violence (taking outside, [illegible])
SXR15YN -	Direct physical threats likely to result in harm ([illegible] weapon produced). NOT insults, calling manager, refusals, and bold demands)

S1R2. ***Interviewer:*** **"What if John just turns to you and smiles, what would you do?"**

Open Response #2 (*write down response*):

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Second Response (S1)	S1R02YN	Violence=1 / Everything else=0

S1R3 to S1R6. ***Interviewer*: What else could you do?**

(Experimenter records answer then repeats this question until the subject can not generate any solutions. Experimenter records the responses, then prompts "What else could you do? When the subject finishes the experimenter records the total number of solutions, and scores each solution)

S1R03YN Open Response #3 (*write down response*):

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Third Response (S1)	S1R03YN	Violence=1 / Everything else=0

S1R04YN Open Response #4 (*write down response*):

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Fourth Response (S1)	S1R04YN	Violence=1 / Everything else=0

S1R05YN Open Response #5 (*write down response*):

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Fifth Response (S1)	S1R05YN	Violence=1 / Everything else=0

S1R06YN

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Violent Response (S1)	S1R06YN	If any of the above responses (S1R01-05) are violent=1, If None=0

SIRO6SQ

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Violent Response Sequence (S1)	S1R06SQ	If the first violent response is in S1R01YN = 5, S1R02YN =4, S1R03YN 3=3, S1R04YN =2, S1R05YN =1. If NO violent responses =0

S1R7T: Total number of responses generated for situation 1. _____

S1R07T

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Number of Solutions (S1)	S1R07T	Total number of responses

S1R07ES

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Number of Effective Solutions (S1)	S1R07ES	Total number of non-hostile, non-violent solutions. Include avoidance, compromise, compliance, and withdrawal. polite assertion. **Do not include threats, insults, intimidation**

S1R07HS

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Number of Hostile Solutions (S1)	S1R07HS	Total number of hostile and violent solutions. Count the number of violent and aggressive responses, even if repeated. Include threats, insults, intimidation, provocation, and disrespectful demands.

S1R08EV. ***Interviewer***: **What type of things could happen after you ... (response given to S1R2)?**

Write down responses?

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Expects Violence (S1)	S1R08EV	Any expectation of violence or physical conflict (ends in fight, even if other person initiates) =1, if none=0

Interviewer: **"Now let's take a step back and look at this situation..."**

S1R09. ***Interviewer***: **"Do you want any more information about the situation?"** Yes ☐ / No ☐

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Request information (S1)	S1R09	Yes=1, No=2

S1R10. ***Interviewer*****: "If so what? What else?"**
(Experimenter repeats this question until the subject no longer requests facts. Record the number of additional facts and the type of facts requested. It is not necessary to provide facts)

Write down the requests

Request Quantity	S1R10	Total number of requests for information for situation

S1R12. ***Interviewer*****: What is the problem in this situation?**
(If subject only repeats situation prompt with "Why is that a problem?")

S1R12HD

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Causal Attribution (S1)	S1R12HD	The other person is the cause of the problem, blames other, insults =1, all others=0

S1R12PD

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Positive Definition (S1)	S1R12PD	Accident, misunderstanding, miscommunication=1, other=0

S1R13**: *Interviewer* If you had to deal with this situation what would be your goal?**

Interviewer **Can you think of other goals?**
Write responses until no more goals are generated:

S1R13HG

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Hostile Goal (S1)	S1R13HG	Punish, retaliate, get even, force, demand, provoke, conflict=1, other=0

S1R13PG

Variable Label (S1) – Situation One	Variable Name	Scoring Guidelines
Positive Goal (S1)	S1R13PG	Communicate, assertion, polite request, resolution, helpful=1, other=0

***S1R14: Interviewer* why do you think the John acted this way?**

Write response:

S1R14HI

Variable Label: (S1) – Situation One	Variable Name	Scoring Guidelines
Hostile Attribution (S1)	S1R14HI	Deliberate, on purpose, name calling, character flaw, provocative=1, other=0 (drunk=0)

S1R14NI

Variable Label: (S1) – Situation One	Variable Name	Scoring Guidelines
Neutral Attribution (S1)'	S1R14NI	Accidental, benign, other difficulties, personal problems=1, other=0

***S1R15*: *Interviewer*: Of all the responses that you gave me earlier, what do you think is the very best way to deal with this situation?**

Write response:

S1R15YN

Variable Label: (S1) – Situation One	Variable Name	Scoring Guidelines
Best Response (S1)	S1R15YN	Violence=1 / Everything else=0

***S1R16: Interviewer*: What would the typical straight john do to handle this situation?**

Write response:

S1R16YN

Variable Label: (S1) – Situation One	Variable Name	Scoring Guidelines
	S1R16YN	Violence=1 / Everything else=0

SCORING GUIDELINES FOR VIOLENCE RATING
S1R14YN: Non-violent defensive (e.g., physically aggressive but: Direct physical contact
S1R05YN: Includes clearly implied violence (talking outside)
S1R15YN: Direct physical threats likely to result in harm (someone else, bringing weapon produced); NO threats; calling manager; refusals; apology; demands)

Situation One

Here is a set of questions asking you to rate your answer on different scales. Circle the answer that best describes your reaction to the situation that was just presented to you. If you would like me to read the situation to you again - just ask. Please answer the following by yourself. If you need any help with these questions -just ask.

17. How much of a **problem** would this situation be for you?

No problem at all | 1 | 2 | 3 | 4 | 5 | a big problem

18. If this actually happened to you, how well do you think you could **handle** it?

Would handle it very poorly | 1 | 2 | 3 | 4 | 5 | Would handle it very well

19. How likely would you be to **stop and think** about what to do before you did something:

Would definitely stop & think | 1 | 2 | 3 | 4 | 5 | Would act right away

20. If this situation happened to you, how **angry** would you feel?

Not angry at all | 1 | 2 | 3 | 4 | 5 | Very Angry

21. If this situation happened to you, how likely would it end up in a physical **fight**?

No chance of a fight | 1 | 2 | 3 | 4 | 5 | Certain to fight

22. Would getting into a physical fight be the best or worst **way to deal** with this situation?

Worst way to deal | 1 | 2 | 3 | 4 | 5 | Best way to deal

23. Do you think the other person acted **deliberately** to upset you?

Did not want to upset me | 1 | 2 | 3 | 4 | 5 | Tried to upset me

24. How much respect does the other person have for you?

Other person respects me | 1 | 2 | 3 | 4 | 5 | Person does not respect me

25. How well could you control your anger in this situation?

Complete control | 1 | 2 | 3 | 4 | 5 | Little Control

Situation #2

You and a friend are going to have a pool game tomorrow with two other people for a lot of money. Unfortunately you have not played in quite some time, and the people you are playing with are as good as you are (maybe better). You decide to go to the local bar to practice.

When you get there you see some guy by himself at the only pool table in the bar. The guy is just bouncing the pool balls off each other with his hand (not even using a pool cue). He is not playing a game (or at least not a game you ever heard of), but he has been at the table for 30 minutes. He is aware that you are standing there waiting for the table, but he seems a little drunk, and does not seem to care. Finally you ask the guy if you can play a round. The guy just turns to you and says "no".

Situation #3

You are sitting at a table in a restaurant with some friends. Some guy (not a waiter or staff person) with a tray of drinks walks by and spills some of his drink on your lap. He continues to walk and does not look your way.

Situation #4

You are sitting at a table in a restaurant with some friends. A woman (not a waitress or staff person) with a tray of drinks walks by and spills some of her drink on your lap. She continues to walk and does not look your way.

Items presented in the review stage (after all situations are addressed)

S1R26SR. What do you remember about situation one? (Prompt with vague details)

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Situation Recall	S1R26SR	If any hostile or violent recollections score 1, all others=0

S1R27SR What do you remember about the person in situation one?

Variable Label (S1) = Situation One	Variable Name	Scoring Guidelines
Antagonist Recall	S1R27SR	If any hostile or violent recollections score 1, all others=0

If situation one escalated into a fight between you and John, what would your friends think if you beat John up?

Variable Label (SxR = where x = situation)	Variable Name	Summary Scoring Guidelines
First Response (Sx)	SxR01YN	Violence=1 / Everything else=0
Second Response (Sx)	SxR02YN	Violence=1 / Everything else=0
Third Response (Sx)	SxR03YN	Violence=1 / Everything else=0
Fourth Response (Sx)	SxR04YN	Violence=1 / Everything else=0
Fifth Response (Sx)	SxR05YN	Violence=1 / Everything else=0
Violent Response (Sx)	S1R06YN	If any of the above responses (S1R01-05) are violent=1, If None=0
Violent Response Sequence (Sx)	S1R06SQ	If the first violent response is in S1R01YN = 5, S1R02YN =4, S1R03YN 3=3, S1R04YN =2, S1R05YN =1. If NO violent responses =0
Number of Solutions (S1)	SxR07T	Total number of responses
Number of Effective Solutions (Sx)	SxR07ES	Total number of non-hostile, non-violent solutions. Include avoidance, compromise, compliance, and withdrawal. Polite assertion. **Do not include threats, insults, intimidation**
Number of Hostile Solutions (Sx)	SxR07HS	Total number of hostile and violent solutions. Count the number of violent and aggressive responses, even if repeated. Include threats, insults, intimidation, provocation, and disrespectful demands.
Expects Violence (Sx)	S1R08EV	Any expectation of violence or physical conflict (ends in fight, even if other person initiates) =1, if none=0
Information Request (Sx)	SxR09	Requests more information.. yes=1, no=2
Causal Attribution (Sx)	SxR12HD	The other person is the cause of the problem, blames other, insults =1, all others=0
Positive Definition (Sx)	SxR12PD	Accident, misunderstanding, miscommunication=1, other=0
Hostile Goal (Sx)	SxR13HG	Punish, retaliate, get even, force, demand, provoke, conflict=1, other=0
Positive Goal (Sx)	Sx1R13PG	Communicate, assertion, polite request, resolution, helpful=1, other=0
Hostile Attribution (Sx)	SxR14HI	Deliberate, on purpose, name calling, character flaw, provocative=1, other=0 (drunk=0)
Neutral Attribution (Sx)'	SxR14NI	Accidental, benign, other difficulties, personal problems=1, other=0
Best Response (Sx)	SxR15YN	Violence=1 / Everything else=0

Belief Inventory

Participant #: [ ]

The following statements are beliefs that have to do with getting into fights. After reading each statement please circle the number that best describes how much you agree with the statement. Circling "1" would mean that you strongly disagree with the statement, circling "5" means that you strongly agree with it. Remember there are no right or wrong answers.

1. It's O.K. to hit someone if I just go crazy with anger.

1 2 3 4 5
Strongly Disagree Strongly Agree

2. It is NOT important to show everyone how tough I am.

1 2 3 4 5
Strongly Disagree Strongly Agree

3. If I back down from a fight everyone will think I am a coward.

1 2 3 4 5
Strongly Disagree Strongly Agree

4. If someone gets beat up, it's usually not their fault.

1 2 3 4 5
Strongly Disagree Strongly Agree

5. People who get beat up probably suffer a lot.

1 2 3 4 5
Strongly Disagree Strongly Agree

6. The best way to get ahead is to fight my way to the top.

1 2 3 4 5
Strongly Disagree Strongly Agree

7. I do not feel good about myself after I have been in a fight

1 2 3 4 5
Strongly Disagree Strongly Agree

8. People respect someone who wins a lot of fights.

1 2 3 4 5
Strongly Disagree Strongly Agree

9. It is all right to beat up someone who has made fun of me.

1	2	3	4	5
Strongly Disagree				Strongly Agree

10. The worst way to deal with someone who informs on you is to beat that guy up.

1	2	3	4	5
Strongly Disagree				Strongly Agree

11. You have to fight someone if he violates certain rules.

1	2	3	4	5
Strongly Disagree				Strongly Agree

12. Winning a fight makes me feel good.

1	2	3	4	5
Strongly Disagree				Strongly Agree

13. Most of the leaders I know either have muscle themselves, or muscle to back them up.

1	2	3	4	5
Strongly Disagree				Strongly Agree

14. Usually it's the tougher guys that get the best women.

1	2	3	4	5
Strongly Disagree				Strongly Agree

15. The worst way to settle something is to beat the other guy up.

1	2	3	4	5
Strongly Disagree				Strongly Agree

16. Getting a beating is the only way to learn a lesson.

1	2	3	4	5
Strongly Disagree				Strongly Agree

17. It's all right to beat up someone who has cheated me.

1	2	3	4	5
Strongly Disagree				Strongly Agree

18. Violence is the only way to settle certain problems.

1	2	3	4	5
Strongly Disagree				Strongly Agree

19. You should not fight with someone who steals from you

1	2	3	4	5
Strongly Disagree				Strongly Agree

20. Might makes right.

1	2	3	4	5
Strongly Disagree				Strongly Agree

21. If I get into a fight, chances are I'll never get caught for it.

1	2	3	4	5
Strongly Disagree				Strongly Agree

22. If people know that I can fight, they will not bother me.

1	2	3	4	5
Strongly Disagree				Strongly Agree

23. Getting into a fight shows people I am not a punk.

1	2	3	4	5
Strongly Disagree				Strongly Agree

24. I have to fight if someone insults me in front of other people.

1	2	3	4	5
Strongly Disagree				Strongly Agree

25. Most people would pick a fight with me if they thought they could win.

1	2	3	4	5
Strongly Disagree				Strongly Agree

26. It is good to be prepared for a fight in every situation.

1	2	3	4	5
Strongly Disagree				Strongly Agree

27. If I had a son, the best lesson I could teach him would be how to fight.

1	2	3	4	5
Strongly Disagree				Strongly Agree

28. Close friends are friends that will stick by you in a fight.

1	2	3	4	5
Strongly Disagree				Strongly Agree

29. If someone insults me and I let them get away with it without a fight, it shows that the insult is true.

1	2	3	4	5
Strongly Disagree				Strongly Agree

30. Real men use their fists when they have a beef with someone.

1	2	3	4	5
Strongly Disagree				Strongly Agree

Violent Belief Inventory Items that are reversed scored.

* 2. It is NOT important to show everyone how tough I am.

* 4. If someone gets beat up, it's usually not their fault.

* 5. People who get beat up probably suffer a lot.

* 7. I do not feel good about myself after I have been in a fight

* 10. The worst way to deal with someone who informs on you is to beat that guy up.

* 15. The worst way to settle something is to beat the other guy up.

* 19. You should not fight with someone who steals from you

Behavior Survey

Participant #: [ ]

Some people have been in many fights in their lifetime; others have only been in a few. The following questions are designed to measure your history of fighting.

Some of the questions can be answered by selecting either "*Yes*" or "*No*". For those just put a "✓" in the space next to your response. Most questions ask you "*how many times*" you did something. These questions are followed by a "#: _____". The symbol # means number. The question is asking you to fill in the number.

Often it is hard to remember exactly how many times we did things. If you do not know the exact number **write down you best guess** (an estimate). If you have never done what the question asks, or it has never happened, just write a zero "0" after the "#:"

Read each question carefully

1. How many times have you been in a physical fight with another person?	#: _____
2. How many times have you seriously hurt someone (required medical attention) in a physical fight?	#: _____
3. How many violent crimes have you been convicted of? (Do not include robbery)	#: _____
4. How many violent crimes have you committed, including those that you were never caught for? ? (Do not include robbery)	#: _____
5. How many times have you threatened someone with physical harm?	#: _____
6. How many times have you fought in jail and prison?	#: _____
7. How many assaults have you been convicted of?	#: _____
8. How many times have you used a weapon on someone?	#: _____
9. How many times have you hit a wife or a girlfriend?	#: _____
10. How many times have you taken part in a robbery involving the use of physical force?	#: _____
11. How many times have you taken part in a robbery involving the use of a weapon?	#: _____

12. How many times have you fought with someone who was trying to arrest you?	#: _____
13. How many times have you become violent in order to get people to do things for you (for example, forcing someone to give you cash or drugs)?	#: _____
14. Of all the times you have fought, how many times were you drunk or stoned?	#: _____
15. Of all the times you have fought, how many times did you fight a complete stranger?	#: _____
16. Have you ever taken a cognitive skills program?	Yes ____ No ____
17. Have you ever taken an anger control program?	Yes ____ No ____
18. In all the times you have been in jail or prison, how many disciplinary charges involving violence have you had?	#: _____
19. As a child (under 12) how many times did you physically fight?	#: _____
20. As a child (under 12) how many times did you use a weapon on someone?	#: _____
21. How many times were you charged with a juvenile crime involving violence or weapons?	#: _____

End of questionnaire.

Balanced Inventory

Using the scale below as a guide, write a number beside each statement to indicate how much you agree with it.

1 —— 2 —— 3 —— 4 —— 5 —— 6 —— 7

NOT TRUE	SOMEWHAT TRUE	VERY TRUE

_____ 1. My first impressions of people usually turn out to be right.
_____ 2. It would be hard for me to break any of my bad habits.
_____ 3. I don't care to know what other people think of me.
_____ 4. I have always been honest with myself.
_____ 5. I always know why I like things.
_____ 6. When my emotions are aroused, it biases my thinking.
_____ 7. Once I've made up my mind, other people can seldom change my opinion.
_____ 8. I am not a safe driver when I exceed the speed limit.
_____ 9. I am fully in control of my own fate.
_____ 10. It's hard for me to shut off a disturbing thought.
_____ 11. I never regret my decisions.
_____ 12. I sometimes lose out on things because I can't make up my mind soon enough.
_____ 13. The reason I vote is because my vote can make a difference.
_____ 14. My parents were not always fair when they punished me.
_____ 15. I am a completely rational person.
_____ 16. I rarely appreciate criticism.
_____ 17. I am very confident of my judgements.
_____ 18. I have sometimes doubted my ability as a lover.
_____ 19. It's all right with me if someone happens to dislike me.
_____ 20. I don't always know the reasons 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 done things that I don't tell other people about.

_____ 36. I never take things that don't 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.

Information Form

This form is intended to tell you about a study of problem-solving study, which you may be interested in participating in.

Purpose

This study will examine the relationship between how people solve social problems and how they process social information.

Why you were selected

In this study, I have selected 100 inmates by chance, simply by choosing names randomly from a list of all inmates in the institution. With this letter I am asking you if you would like to be involved in this study. There is no special reason why you were picked over anyone else.

Procedure

If you agree to take part in this study, you will be asked to fill out several written [paper and pencil] questionnaires about the way you solve problems on the street. I will also interview you and ask you how you would solve some social problems. I will also be interested in comparing this information with your previous criminal record, so I will ask you for your permission to get this information from your institutional files. The interviews will be private, and only you and myself or an assistant will be there. There are no right or wrong answers to the questionnaires, and there are no time limits. I estimate that filling out all the questionnaires may take one and a half-hours time at the most, and can it be finished in one session.

Withdrawing from this study

You may withdraw from this study at any time, for any reason. You do not have to explain why unless you wish to do so. If you decide to withdraw, all information gathered by this study concerning you will be destroyed.

Confidentiality

All answers that you give will be strictly confidential. None of the answers you give will go into institutional files or reported to correctional staff. Your answers will be coded in such a way that no single individual can be identified in the results of this study without consent. All the information provided by you will only be used for the purposes of this research study, provided that you do not give specific information that you are about to harm yourself or someone else.

If anyone wants to use the information, it will require your written permission. The general findings of this research may eventually be presented in a scientific journal, but no person could be identified from this. If you are interested in the findings of this study, you can request them from me when the study is finished.

Complaints

If you decide to participate, and if you should have any complaints or criticisms about the way you were treated during the course of the research, or about any aspect of this study, you may discuss them by contacting my supervisor, Dr. Ed Zamble. If you are still unsatisfied you may contact the Head of the Department of Psychology at Queen's University.

Dr. Edward Zamble
Department of Psychology
Queen's University
Kingston, Ontario
K7L 3N6
[613] 545-2892

Dr. R. Kalin
Head of the Department of Psychology
Queen's University
Kingston, Ontario
K7L 3N6

Thank You,

Participant #: [ ]

Consent Form

I, _____ [print full name], have been selected to take part in a research study of Social Problem-solving. I have read the "Information Form" describing this study, which has been given to me to keep. I have been told that this study is being carried out by Michael Bettman, under the direction of Dr. Edward Zamble of the Psychology Dept. at Queen's University.

My signature below shows that I agree to take part in this study. I also consent to have my institutional files reviewed by the principal researcher. I understand that taking part in this study is entirely voluntary. I will be free to refuse to answer any specific questions that are asked of me. I may also withdraw from the study at any time. My participation will not in any way influence the way I am treated by the Correctional Service of Canada, or the National Parole Board.

Any information that I give will be strictly confidential. The information I give will be used for research purposes only, and this information will be coded in such a way that I cannot be identified in any reports of this study. I have been given information on where I can take any complaints or requests for more information.

My signature below shows my agreement to take part in this study.

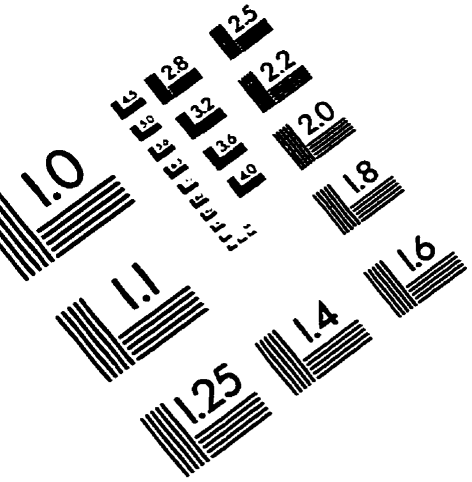
_____	_____	_____
Today's Date	participant's signature	participant's name [print]

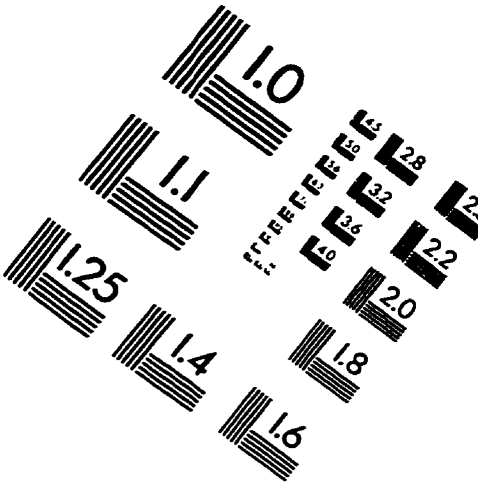
_____

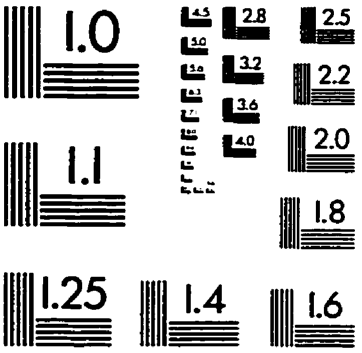
Experimenter:

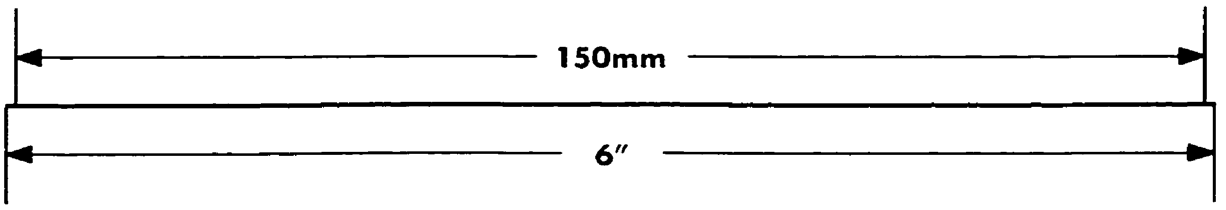
Description of Offenses coded as Violent	Criminal Code
Aggravated Assault	
Armed Robbery	
Assault	
Assault With A Weapon Or Causing Bodily Harm	
Assault With Intent	
Assaulting A Peace Officer	
Attempt To Commit Murder	Section 239
Attempt To Commit Rape	
Cause Bodily Harm With Intent To Endanger Life	
Causing Bodily Harm By Criminal Negligence	Section 221
Causing Bodily Harm With Intent	Section 244
Causing Death By Criminal Negligence	Section 220
Causing Injury With Intent	paragraph 81(2)(a)
Common Assault	
Conspiracy To Commit Murder	
Discharging A Firearm With Intent To Endanger Life	
Extortion	
Forcibly Seize	
Grievous Bodily Harm	
Kidnapping	
Manslaughter	Section 236
Murder First Degree	
Murder Second Degree	
Pointing A Firearm	Subsection 86(1)
Robbery With Violence	
Threatening With A Weapon	
Unlawfully Causing Bodily Harm	
Use Of Firearm During Commission Of Offense	Section 85
Wounding	
Wounding With Intent	

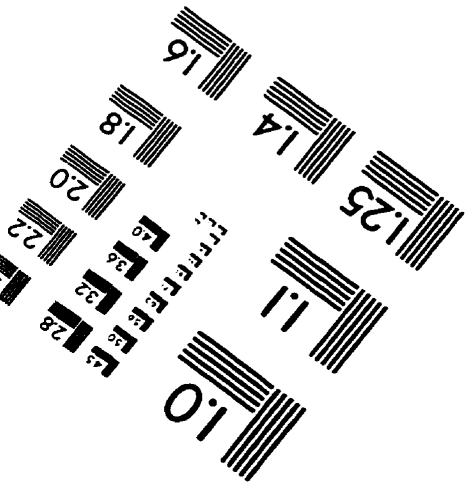
IMAGE EVALUATION
TEST TARGET (QA-3)

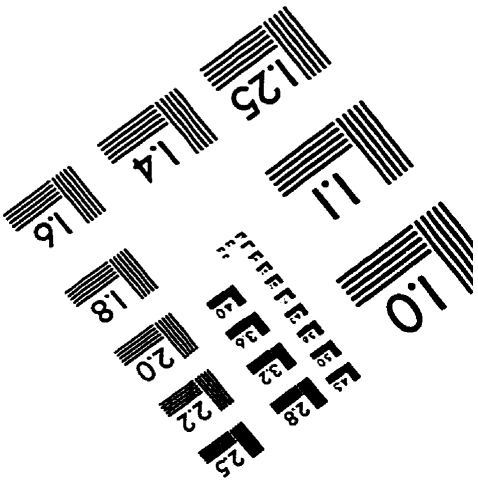












APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989