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PSYCHOMETRIC CORRELATES OF BEHAVIOURAL IMPULSIVITY
IN ADULT MALE CRIMINAL OFFENDERS

By

Ian E. McKenzie

A paper submitted to the Department of Psychology
in partial fulfilment of the requirements for
the Master of Arts degree at
Carleton University
Ottawa

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The undersigned recommend to the Faculty of Graduate Studies
and Research acceptance of this thesis

**"Psychometric Correlates of Behavioural Impulsivity
in Adult Male Criminal Offenders"**

Submitted by

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in partial fulfilment of the requirements for the
degree of Master of Arts

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Abstract

Seventy-seven adult male criminal offenders were assigned to one of three groups--Impulsive, Disinhibited, and Nonimpulsive--on the basis of observed and documented behavioural characteristics. An MMPI impulsivity index, the Level of Supervision Index, the Criminal Sentiments Scale, the Socialization (So) and Social Responsibility (Re) scales, and a new combination of three items from the Means-Ends Problem-Solving (MEPS) procedure discriminated the Impulsive group from the other two. MEPS results show that Impulsives are deficient in their ability to conceptualize discreet steps, obstacles, and time considerations in tasks requiring the elicitation of social approval. No significant differences were found among groups on the Matching Familiar Figures Test results, or on measures of locus of control, empathy, cognitive inflexibility, or problem-solving confidence. Implications of these findings for the nature of the impulsivity construct and objectives for treatment interventions are discussed, and a test critique is presented.

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Finally, I would like to thank all of the residents of the RTC who volunteered to take part in this project, and who share this author's belief that treatment does work, and for the sake of ourselves and our loved ones, must continually be made to work better.

This paper is dedicated to those loved ones I have lost during the course of its creation; my dear father, John McKenzie, O.St.J., C.D. (1929-1989), and my sister in-law Melinda Anne Lloyd-Stromquist (1963-1990). The paper is also dedicated to those loved ones that I have gained in that time; my son John Dale McKenzie (1990), and his yet to be born brother or sister.

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INTRODUCTION

Several recent reviews of the correctional treatment literature (Andrews, Bonta, & Hoge, 1990; Andrews, Zinger, Hoge, Bonta, Gendreau, & Cullen, 1990; Gendreau & Ross, 1979, 1981, 1987; Ross & Fabiano, 1982, 1983; Ross & Gendreau, 1980) tend to confirm the conclusion that "effective correctional programs can be reliably differentiated from ineffective programs on the basis of the presence or absence of specific cognitive training components in the program" (Ross & Fabiano, 1983, p. 4). Consistent with this, Ross and Fabiano (1981, 1983, 1985) have proposed a cognitive model of delinquency and criminal behaviour hypothesizing that deficits in certain cognitive abilities such as problem-solving, empathy, the ability to delay responding, abstract reasoning, cognitive flexibility, and social perception directly contribute to criminal behaviour. They argue that, in general, any cognitive skill deficit that in some way limits the individual's ability to function effectively in the social realm "may repeatedly lead the individual into social difficulties and may place him at risk for a criminal adjustment" (Ross & Fabiano, 1983, p. 3).

Behaviourally, juvenile and adult criminal offenders often display clinical evidence of impulse control deficits. In some cases, the individual may show a history of repeated failures to "inhibit impulses" across a variety of settings or contexts. In other cases, the individual may demonstrate adequate impulse control much of the time but behave in an impulsive fashion in certain settings or contexts. For some individuals, general impulse controls may appear to be adequate but control over specific kinds of impulses (e.g., sexual) may be inadequate.

However, it is important to distinguish between overt and observable failures to control impulses and the reasons or bases for these failures. Even with similar patterns of "behavioural impulsivity" (i.e., observable behaviours which appear to be more-or-less reflexive and spontaneous and lacking in deliberation or forethought), the failure to control impulses may reflect different underlying traits or processes ("cognitive impulsivity"). Specifically, impulsive behaviour may be the result of an inability to inhibit the impulse, an unwillingness to inhibit impulses in one or more contexts, or a disruption or disinhibition

of normal impulse controls under certain conditions. Moreover, deficient inhibitory controls may not necessarily reflect the same cognitive-behavioural deficit(s) in different individuals.

The present study examines the construct of impulsivity as a cognitive-behavioural trait or process and its relationship to interpersonal problem-solving skills, empathy, cognitive impulsivity-reflectivity, cognitive flexibility-inflexibility, socialization-psychopathy, and locus of control.

Impulsivity, Problem-Solving, and Criminal Behaviour

The term "cognitive tempo" is used in the literature to refer to the extent to which an individual possesses or displays the ability to delay responding, and, by implication, the degree to which errors in judgement result. Cognitive tempo has been conceived as a continuum in terms of the degree to which the individual considers the validity of his proposed course of action in the face of problems that contain response uncertainty. The individual who does not delay responding, and consequently is more likely to make errors, is said to be impulsive, while the

person who delays responding, and thereby makes fewer errors, is said to be reflective (Kagan & Messer, 1975).

It has been suggested (e.g., Nuessle, 1972) that individuals who are unable to delay responding may be deficient in certain problem-solving skills and that these deficits are a primary "cause" of the behavioural impulsivity observed in such individuals. D'Zurilla and Goldfried (1971) define problem-solving as "a behavioural process, whether overt or cognitive in nature, which (a) makes available a variety of potentially effective response alternatives for dealing with a problematic situation and (b) increases the probability of selecting the most effective response from among the various alternatives" (p. 108). The relationship between the impulsivity-reflectivity continuum and problem-solving is aptly characterized by Nuessle (1972): "The ability to inhibit dominant response or first available solutions is a valuable problem-solving technique, as it allows time for adequate input and storage of information" (p. 266). In this light, impulse control comprises several cognitive-behavioural components, including: (a) the

ability to delay responding; (b) the ability to generate or conceptualize a variety of potentially effective response alternatives; (c) the ability to select an alternative that is appropriate and adaptive in a particular context (or, at the very least, one that is not maladaptive or counterproductive); and (d) the ability to carry out the response in an effective and prosocial manner. Thus, impulsivity "may be viewed as a failure to insert between impulse and action a stage of reflection, a cognitive analysis of a situation" (Ross & Fabiano, 1985, p. 36).

A number of studies have demonstrated that individuals with various social adjustment difficulties exhibit deficits in interpersonal problem-solving ability. As a consequence, they are at a disadvantage in interacting effectively with their environment and in some cases may exhibit seriously maladaptive behaviours. For example, Brannigan and Ash (1977) reported that children classified as impulsives on the basis of scores on the Matching Familiar Figures Test (MFFT: Kagan et al., 1966) made significantly more errors than reflectives on tests of inductive reasoning (Kagan, Pearson, & Welch, 1966), reading recognition

(Kagan, 1965a), and visual discrimination (Kagan, 1965b). Oas (1983) found that cognitive tempo (impulsivity-reflectivity) was related to overt impulsive behaviour in an adolescent psychiatric population. Levenson and Neuringer (1971) found that suicidal adolescents exhibited diminished problem-solving abilities. Platt et al. (1974) observed that adjustment in adolescent psychiatric patients (compared to normal controls) was a function of the degree to which they possess certain specific cognitive skills which the authors view as essential to successful interpersonal problem-solving. Platt and Spivack (1972b) demonstrated that social competence (i.e., the effectiveness of a person's social behaviour--cf. McFall, 1982) was related to problem-solving ability in a population of adult psychiatric patients. Platt, Scura, and Hannon (1973), Platt (1973), and Platt and Spivack (1972a, 1972b) found that performance on a test dealing with a component of problem-solving skills (Social Means-Ends Test) differentiated adolescent heroin addicts from non-addicts and disturbed adult psychiatric patients from appropriate controls. In criminal offenders, Higgins and Thies (1982) found that

variations in problem-solving ability differentiated between those offenders who were judged by their peers to be "misfits" and those who were not, those judged by prison officials to be discipline problems and those who were not, and those offenders who seem to be making the best use of institutional resources.

As Ross and Fabiano (1985) note, this does not mean that all criminal offenders necessarily display deficits in these particular cognitive skills, or that any offender is likely to be deficient in all of these skills, or that individuals who do not exhibit such deficits do not sometimes commit crimes: "Many offenders evidence not the slightest cognitive deficit; their criminal acts are perfectly rational, well planned ... and profitable!" (Ross & Fabiano, 1985, p. 10). In particular, it does not necessarily mean that criminal acts that appear impulsive are always the result of cognitive deficits (or even deficits in ability to control impulses). However, it is a reasonable extension of their logic to propose that where the criminal act is unplanned, spontaneous, and impulsive in nature, the likelihood of finding such cognitive skill deficits is greater, and that the

greater the magnitude or number of such deficits, the greater will be the likelihood of repeated criminal acts.

Ross and Fabiano (1985) emphasize an acknowledged though often disregarded observation in the area of correctional research--offenders are not a homogenous group. The heterogeneity noted in offender characteristics as well as the uncertain link between cognitive and behavioural impulsivity may be part of the reason some recent studies have been unable to discern differences in specific cognitive skills between offender and non-offender groups (cf. Ross & Fabiano, 1985). For example, no evidence of a link between cognitive impulsivity and criminal behaviour was found in comparisons between institutionalized aggressive pre-delinquents and non-delinquents (Glenwick, Croft, Baroca, & Black, 1979), or between adolescent reformatory inmates and non-offenders (Saunders, Repucci, & Sarata, 1973). In fact, Glenwick et al. (1973) found that their sample of institutionalized predelinquent preadolescent subjects were less impulsive than their control group of nondelinquent public school students as defined by

scores of cognitive impulsivity-reflectivity. Again, it must be stressed that deficits in specific cognitive skills are not exclusive to offenders and clearly do not necessarily lead to criminal behaviour.

Moreover, the question of whether or not there are characteristic differences in specific cognitive skills between offenders and non-offenders in itself says little about the nature of the relationship between those skills and criminal behaviours, or about how this relationship is affected by individual differences in other skills, traits, or emotional features. Further, while theorists speculate about the influence of constructs such as impulsivity, interpersonal problem-solving skills, etc., another important issue arises: the need for accurate, valid, reliable, and practical measures of those constructs.

Problems with the Construct of Impulsivity

A considerable number of studies have suggested that a characteristic of many offenders is their lack of self-control, their failure to self-regulate their behaviour, and their tendency to behave impulsively. Faced with a temptation or problem situation, many fail to delay their

actions, to allow themselves time to analyze situations, and consider the possible courses of action they might take, or to think about the consequences for their behaviour. Too often, they respond in a non-reflective way and do so immediately without any self-regulatory thought.

(Ross & Fabiano, 1985, pp. 35-36)

Although there is a sizeable clinical and experimental literature on impulsivity, the concept remains "vague and mostly theoretical" (Hirschfield, 1965, p. 117). One of the difficulties is that although the concept is easily understood in a general sense, it has been difficult to arrive at a consensus on a precise definition. The most recent version (APA, 1988) of the Diagnostic and Statistical Manual (DSM III-R) lists the following essential features of disorders of impulse control:

1. Failure to resist an impulse, drive, or temptation to perform some act that is harmful to the person or others. There may or may not be conscious resistance to the impulse. The act may or may not be premeditated or planned.

2. An increasing sense of tension or arousal before committing the act.
3. An experience of either pleasure, gratification, or release at the time of committing the act. The act is ego-syntonic in that it is consonant with the immediate conscious wish of the individual. Immediately following the act there may or may not be genuine regret, self reproach, or guilt. (DSM III-R, p. 321)

While these criteria may have some utility in the differential diagnoses of impulse disorders, it is not clear that they are very helpful in terms of identifying the cognitive processes or traits that underly impulsivity or in specifying the nature of the construct of impulsivity.

One of the difficulties with the concept of cognitive tempo is the issue of how to measure it, or alternatively, how to define it adequately without recourse to existing measures, thereby making the definition circular. In spite of early warnings by the major cognitive tempo theorists that neither reflection nor impulsivity should be conceptualized in their popular meaning and that these dispositions are not

generalizable to broad aspects of the individual's spontaneous behaviour in natural settings (Kagan & Messer, 1975), many researchers have done just that. Block, Block, and Harrington (1974) note that the MFFT "has become accepted as 'the primary index' of reflection-impulsivity in children and by now has been employed as a criterion measure of reflection-impulsivity in a wide variety of investigations" (p. 611). Bowman and Auerbach (1982) add that "the dependent variable [in impulsivity research] has almost always been limited to change in MFFT performance, a selected task that seems to tap only selected aspects of the constellation of factors associated with impulsivity" (p. 433).

The MFFT has been the most commonly used instrument in the assessment of cognitive tempo (impulsivity-reflectivity), although it has been used primarily with children (Kagan et al., 1966). The major criticisms of this test have been that there are no norms available, there is no alternate form, and studies of its use with adults are quite scarce (Arizmendi et al., 1981). Fortunately, some normative information has recently become available for adult

male offenders (Heckel et al., 1989) and for adult male and female college students (Heckel et al., 1980, cited in Heckel et al., 1989).

Arizmendi et al. (1981) list five characteristics of the MFFT which recommend its use:

1. Administration and scoring procedures are simple and inexpensive.
2. Based on empirical evidence, the MFFT seems to be a reliable screening device at least for differentiating extreme levels of reflection and impulsivity.
3. As opposed to other methods, the MFFT does not rely on subjective ratings of a child's behaviour. Also the examiner has the opportunity to assess impulsivity on a cognitive level and on a behavioural level because he can observe readily the subject's movements during the test. Typical paper and pencil inventories do not provide this luxury.
4. The MFFT is very difficult to "fake" because it requires performance rather than opinion.
5. Although the research on predictive validity is scarce, MFFT scores appear to be reliable

prognosticators of behavioural and conceptual tempo outside of the testing environment.

(Arizmendi et al., 1981, p. 817)

Another measure of impulsivity that has been used frequently in research with juvenile delinquents is the Porteus Maze Tests, first published in 1915 and intended primarily for the purpose of diagnosing mental deficiency (Porteus, 1942b). The test consists of a series of printed mazes that increase in the level of difficulty. The subject is required to trace a route through each maze with a pencil; the extent to which he is successful was thought to be a reflection of intelligence and could be expressed quantitatively. Given the ease with which the test could be administered, and the minimal prerequisite skills of the test-taker, it was widely used as a nonverbal, culture-free intelligence test in the study of Australian Aborigines, Formosans, and a variety of other people from other geographic regions.

Porteus (1942b), having found that the responses of delinquents were qualitatively different from normals of equal test age, published a new scoring procedure in which a variety of errors (such as

measures of line quality, lifting the pencil, self-corrections, and so on) could be quantified. This score was called the "Q" score.

The typical delinquent response is marked by careless, haphazard work, persistent disregard of instructions, and satisfaction with an inferior grade of execution or poor workmanship in the task. He does not, of course, know that his effort is being scored in these particulars, and concentrates all his attention on finding his way through the maze; thus, in many cases, he gains a good quantitative score. It is when the delinquent is off guard that his habitual reactions are exhibited without check. It should be emphasized, however, that this is not true of all delinquents, some of whom are as meticulous in performance as any non-delinquent. (Porteus, 1942b, p.268)

Subsequent studies comparing Porteus Maze performance have generally shown elevated Q-scores in delinquent populations (e.g., Docter & Winder, 1954; Fooks & Thomas, 1957; Gibbens, 1958; Porteus, 1959; see Caplan, 1965, for a review). Further, Q-scores were

found to be higher in psychopaths versus non-psychopathic adult criminal offenders (Schalling & Rosen, 1968).

While the Porteus Maze Tests generated a sizable body of research literature in the 1950s and 1960s, its use has declined substantially in recent years for various reasons. Caplan (1965) suggested that even where there are obvious differences in Porteus Maze scores between delinquents and controls, these differences are not easily interpreted. At the time of his writing, he reported that there existed only a "series of complicated assumptions" available for interpreting the significance of Q-scores: "The Q-score is a gross index of functions which appear to be intricately related to intellectual performance, but whose origin may be entirely in the area of personality. While attempts on the part of investigators to explain the Q-score seem genuine enough, its meaning and significance remains vague and seemingly uncommunicable" (p. 132). Caplan (1965) cast the Q-score into further doubt when he stated that "it appears more likely that the Q-score is indicative of emotional factors that affect specific intellectual

abilities rather than of intellectual skills per se" (p.115). In addition to these criticisms, Widom (1978) has questioned the interrater reliability of the Q-score. Consequently, while some recent research has made use of the Porteus Mazes Q-scores (e.g., Sutker & Allain, 1983), they are no longer widely used as a measure of impulsivity.

For research purposes, impulsivity has been typically defined in terms of scores on tests such as the MFFT or the Porteus Maze test. Clinical judgements of impulsivity, however, are more commonly based on standardized personality tests such as the Minnesota Multiphasic Personality Inventory (MMPI: Hathaway & McKinley, 1943).

The MMPI is arguably the most widely used personality test in the world. Anastasi (1988) describes it as "the outstanding example of criterion keying in personality testing" and notes that it has elicited a "flood of research" (p. 526). Several configurations of elevations in the standard clinical scales are associated with difficulties in impulse control. Generally speaking, elevations of the clinical scales 4, 6, 8, and 9, tend to indicate lack

of impulse control, while elevations on the remaining scales (1, 2, 3, 5, 7, and 0) tend to suggest inhibition or restraint of impulses. Configurations involving elevations from both groups may be suggestive of instability in existing impulse controls (Graham, 1977, p. 158). In clinical practice, such considerations are routinely used in the generation of hypotheses about the adequacy of impulse controls. Also, the configuration of the clinical scales may provide information about emotional states or situational factors that may be the potential disruptors or disinhibitors of impulse controls. Finally, additional experimental subscales are available to supplement the standard clinical scales as a further aid to clinical judgement.

It has been suggested that if one wishes to research impulsivity in its more popular meaning (i.e., not only in the impulsivity-reflectivity context), "an attractive stratagem is to develop a variety of 'insufficient indicators', each with its partial validity, with the expectation that a composite of these several measures will provide an appreciably superior index of the broad concept" (Block et al.,

1974, p. 631). In examining the intercorrelations among standard impulsivity measures (including the MFFT), Saunders et al. (1973) and Paulsen and Johnson (1980), found that the concept of impulsiveness as a unitary character trait was not supported. This suggests, rather strongly, that impulsivity may involve deficits in more than one cognitive ability and/or that behavioural impulsivity may have several different causes.

In its broadest sense, impulsivity is a quality that most would agree spans a number of dimensions. First is the dimension concerned with the ability to delay responding. The more rapidly a person responds to a stimulus, the more likely it is that the behaviour will be interpreted as an impulsive act. However, this quality alone is insufficient to characterize a person or even an isolated action as impulsive. The history books are full of examples of the acts of soldiers and policemen (among others) who responded immediately in crisis situations and are seen as heroes. Generally we would not describe such behaviour as impulsive because the behaviours are appropriate and adaptive in the context in which they occur. Thus, a second dimension

must be the accuracy or correctness of the response. An individual who, in a perceived choice situation, responds immediately and makes an incorrect or maladaptive response is more likely to be seen as impulsive than is a person who responds immediately but correctly (the major function of the training of soldiers, policemen, firemen, and the like, is to establish a repertoire of appropriate responses and to increase the likelihood that such behaviours will be emitted correctly and at the opportune moments). A third dimension has to do with frequency or chronicity of impulsive behaviours. The higher the frequency of immediate, inaccurate responses, the more likely we are to label the person impulsive. A fourth dimension concerns the generalization of these behaviours across settings. If impulsive behaviours frequently occur in a large number of different situations, we are more likely to describe the person as chronically or characterologically impulsive.

Individuals who for the most part exhibit good impulse control and under normal circumstances are seen by others as non-impulsive do on occasion behave in an impulsive way. Clinically, this often seems to be the

result of environmental and/or emotional-cognitive factors that act to disrupt or disinhibit otherwise adequate controls. For example, loss of a significant other or any other event that the individual perceives as a threat or loss could serve to disrupt the impulse controls characteristic of that person. Emotional states (e.g., anger, depression, fear, or anxiety) and intoxication by alcohol or other drugs have also been shown to be potent disinhibitors (e.g., Barbaree, Marshall, Yates, & Lightfoot, 1983; Yates, Barbaree, & Marshall, 1984).

The individual who, for whatever reason, reacts inappropriately to a particular situation is likely to be exposed to a qualitatively different set of consequences for his behaviour than an individual who reacts more appropriately. It seems highly probable that such life experiences bring about a mental set or cognitive orientation which impacts upon subsequently acquired cognitive strategies. To put it another way, one's learning history must be implicated in the modification of cognitive strategies to a large extent, and it would be reasonable to suppose that the emotional and material byproducts of the behavioural

consequences would tend to strengthen or weaken the tendency to behave in a particular manner. The issue of whether or not there are interactions between impulsivity and other personality traits such as conceptual rigidity, locus of control, and empathy was therefore investigated in this study.

Impulsivity and Locus of Control

"Locus of Control" refers to an individual's views about self-determination. The individual who believes that he himself exercises control over his life and attributes rewarding or punishing consequences to his own behaviour is said to have an internal locus of control. Conversely, the individual who attributes rewarding and punishing events to fate, chance, or other people (powerful others) is said to have an external locus of control (Levenson, 1973; Rotter, 1966).

From a behavioural perspective, locus of control may be viewed as a learned cognitive-perceptual set which influences how a person is likely to respond in situations involving his perception of success or failure ("odds of success"). The extent to which an

individual attributes consequences to his own actions may have a direct impact on the extent to which new behaviours are employed and on how old behaviours are maintained. That is to say, if an individual usually attributes positive consequences to his own actions, it would be expected that he would be more likely to employ those behaviours again in the future.

Conversely, if an individual does not attribute consequences to his own behaviour, he would be expected to learn little about how his behaviour impacts upon his world. "It seems reasonable that a generalized tendency to regard the outcome of events as being outside one's own control would increase the individual's tendency to act impulsively, since he would not see his own behaviour as relevant to goal attainment" (Shipe, 1971). Thus, an individual with an external locus of control (i.e., an "external") is likely to be 'one who fails to learn from his own behaviour'--a description often applied to an impulsive person.

Rotter (1966) suggests that individuals differ in the degree to which they attribute reinforcing events to their own actions, depending on their particular

histories of reinforcement. One important antecedent is the consistency and predictability of discipline on the part of an individual's caregivers: "Clearly, it would be expected that unpredictable parents would encourage the development of attitudes of external control" (Rotter, 1966, p. 24). This is especially noteworthy because inconsistency and unpredictability of rewards and punishers have been implicated in antisocial behaviour and criminality and in the etiology of psychopathy (e.g, Marshall & Barbaree, 1984; McCord & McCord, 1964; Patterson, Capaldi, & Bank, 1991; Patterson, DeBaryshe, & Ramsey, 1989; Rabin, 1979).

Impulsivity and Cognitive Inflexibility

Cognitive flexibility-inflexibility is also thought to be an important component of interpersonal problem-solving skills: "Rigid thinking refers to thinking that is constricted, thinking that allows consideration of only a few options, rather than consideration of a full range of options" (Field, 1986, p. 63). A person may be quite capable of generating alternate responses to a problematic situation, yet may

dismiss or even fail to consider some of the alternatives due to concrete or categorical thinking or a rigid belief system regarding the subject of the problematic situation. For example, it is no longer unusual for families to attempt to cope with financial constraints by having both spouses active in the workforce. The man who refuses to consider this option because he believes "a woman's place is in the home", "the man brings home the bacon", or "I am somehow inadequate if I alone cannot provide" is clearly at a disadvantage in his ability to effectively resolve the financial problem and thus reduce his experienced stress.

In their classic study of delinquency, Glueck and Glueck (1950) examined various Weschler scores and Rorschach indices and concluded that delinquents were concrete in their thinking and lacked a methodological approach to problem-solving. Subsequent studies using the Kahn Test of Symbol Arrangement (Kipper, 1971, 1977) and tests from the Halstead-Reitan Neurophysiological Battery (Yeudall, Fromm-Auch, & Davies, 1982) found evidence of cognitive inflexibility and response perseveration in delinquent and adult

criminal offenders. Response perseveration was also found on a card-playing task which compared psychopaths to non-psychopaths in an incarcerated sample (Newman, Patterson, & Kosson, 1987).

Some recent studies of problem-solving in antisocial children (especially aggressive boys) provide further support for a link between problem-solving and cognitive flexibility-rigidity. In at least some situations, it is not necessarily the case that antisocial children will generate appreciably fewer alternative solutions to an interpersonal problem. However, the alternatives appear to be less socially competent or effective (e.g., Richard & Dodge, 1982). Moreover, they have difficulty adequately evaluating the consequences or outcomes of a solution they put into effect (enact), and, if the solution fails, they tend to persevere by enacting the same solution or similarly ineffective solutions (e.g., Dodge, 1980; Richard & Dodge, 1982; see Dodge, 1986, for a review). To the extent that cognitive inflexibility limits or impedes effective problem-solving, it may increase the likelihood of impulsive

behaviours through a reduction in the number of acceptable rational alternatives.

Oversimplified, limited, concrete, 'black or white' thinking leads to poor decision-making. The precursors of intolerance of boredom and low frustration tolerance further distort decision-making processes. Decisions tend to be made on the bases of rapid relief and impulsivity rather than by thoughtful resolution, because limited information is considered and actions quickly follow. (Field, 1986, p. 63)

Impulsivity and Empathy

As with the concept of impulsivity, it has been difficult to achieve a consensus on a definition of empathy. For the purposes of this study, empathy is defined as "the intellectual comprehension of another's condition or state of mind without necessarily experiencing that person's feeling" (Ross & Fabiano, 1985, p. 315). It is not unreasonable to hypothesize that a deficiency in empathic skills could serve to contribute to dysfunctional interpersonal interactions that attain clinical levels (Gibbs, 1987). Difficulty

in seeing a situation from another's perspective may hamper the process of selecting effective alternative responses in a problematic social situation because of an inability to predict the reaction of the other person. Thus, the anticipated outcome may be completely inaccurate, or put another way, the selected course of action may produce unpredicted (and possibly counterproductive) results. To the extent that this occurs, one is likely to see the occurrence of behaviours that would be viewed as inappropriate and impulsive in nature.

Again, the literature on aggressive antisocial children provides some limited support for this reasoning. Chandler (1973) found that aggressive delinquent boys were deficient in role-taking and perspective-taking skills. Feshbach and Feshback (1969) and Miller and Eisenberg (1988) found negative correlations between empathy and aggressive behaviour. While there have also been some negative or mixed findings with respect to these skills (see Dodge, 1986), the evidence is sufficient to encourage further exploration of a possible link.

Impulsivity and Socialization-Psychopathy

The notion that there exists a distinct syndrome or personality type such as the "Psychopath" or the "Sociopath" has a long history in the psychiatric and psychological research literature. Attempts at describing the salient features of psychopathy have been active since at least 1835, with Pritchard's original description of "moral insanity" (cited in Pichot, 1978). Efforts to arrive at a more precise consensus have led to some success, yet the work continues after more than 155 years.

A major problem in the diagnosis of sociopathy or psychopathy (the terms are used interchangeably) stems from (i) the lack of a generally accepted definition of sociopathy ('the babble of tongues') and (ii) the lack of a precise recognition of the sociopath (the heterogeneity of populations of psychopaths varying with the sources of selection). Both of these deficiencies confirm the urgent need for a generally accepted definition and procedure for the selection of a homogenous population of psychopaths (Ziskind, 1978, p.47).

While there is still disagreement about the utility of the concept of psychopathy and the nature of the conditions covered by the term (Prins, 1991), there is sufficient evidence in the research literature to suggest that psychopathy is a covariate of impulsivity that must be considered in the context of the present study.

Cleckley (1964) listed 16 features which he considered to be central to and diagnostic of the syndrome, including "inadequately motivated antisocial behavior", failure to learn by experience, failure to follow any life plan, unreliability, lack of guilt or remorse, pathological egocentricity, "general poverty in major affective relations", and "unresponsiveness in general interpersonal relations". In Cleckley's formulation, which has received widespread general acceptance, features such as lack of empathy, poor planning, and limited responsiveness to reinforcement contingencies are explicitly emphasized. Other features, implied by Cleckley but made more explicit in other formulations of psychopathy, include impulsivity, sensation-seeking, impaired problem-solving, and inability to delay gratification (e.g., Blackburn,

1978; DSM-II: APA, 1968; Hare, 1978; Schalling, 1978; Widom, 1978; Ziskind, 1978).

Gough (1948, 1960, 1965) conceived of a continuum of socialization, characterized as:

Running from persons of exemplary probidity and rectitude at one end, through persons of more typical and less beneficent coadunations of positive and negative propensities, to persons of frankly errant and wayward impulse ...the degree to which the person will be able to govern internally his thought and behavior in accordance with the imperatives of his culture will be a consequence of the depth and validity of the role-taking experiences that he has enacted (Gough, 1960, p. 23-24)

With this theory, Gough (1948) tried to show how symptomatic expressions of psychopathy could be explained by "the fundamental propositions of role theory" (Gough, 1960, p.24). To measure an individual's position along this hypothesized continuum, the Socialization (So) scale was constructed (Gough & Peterson, 1952; Gough, 1957). Research generated in the evaluation of this scale has

"supported the hypothesis that the Gough scale is indeed related to psychopathy" (Schalling, 1978, p.100).

In the context of the present study, it would not be unrealistic to expect that a relationship between valid measures of impulsivity and measures of psychopathy will exist, particularly if one holds the assumption that impulsivity is the result of yet-unlearned or poorly learned behaviours or cognitive strategies. Again, in this light, it will be necessary to consider that psychopathy is a potential covariate in research on impulsivity in criminal offenders.

The Present Study

In an adult male offender population, there are two readily available sources of objective evidence which can be used to gauge behavioural impulsivity in an individual. The first is criminal and social history, compiled from data supplied by the offender and collateral sources, including information about developmental history, medical-psychiatric history, academic and vocational adjustment, marital adjustment, substance abuse history, past and current criminal

activities, etc. Although there may sometimes be inaccuracies and gaps in this information, it may often be the richest source of data regarding the frequency and chronicity of impulsive behaviour, the accuracy or appropriateness of behaviour, and the generalization of these behaviours across settings. The second source of information is the subject's performance on psychometric instruments. These include personality tests, and measures to evaluate his current intellectual and academic functioning level, his ability to delay responding, his ability to generate alternative responses, his accuracy in selecting appropriate or adaptive responses from among the available responses, and his ability to formulate the steps required to attain a goal.

In the present study, historical and current behavioural information were used to estimate the degree of behavioural impulsivity displayed by each subject drawn from an adult male offender population. A battery of psychometric instruments were then administered to each subject. This was intended as an exploratory study to investigate (a) the relative utility and validity of available measures of

impulsivity in the assessment of impulse control in adult male offenders, and (b) the relationship between deficits in certain cognitive skills and impulsivity.

METHOD

Subjects

Subjects were recruited from residents admitted to the Assessment Unit at the Rideau Treatment Centre, a facility operated by the Ontario Ministry of Corrections in Burritt's Rapids, Ontario. Due to the requirements of some of the test materials to be described later, subjects were limited to those obtaining a Full Scale IQ of at least 80 and basic literacy skills as measured by the Tests of Adult Basic Education (TABE, survey form D) equivalent to grade six or better in two of the skill areas--reading comprehension and written language skills. In addition, residents with an uncorrected sensory handicap, those currently receiving any psychotropic medication, and those evidencing gross symptoms of an organic or psychotic disorder at the time of testing were not used as subjects.

Over the course of fourteen months, 173 newly admitted residents were individually interviewed by the experimenter. The objectives of the study, the nature of the test material, and the time required to complete the study were fully disclosed prior to asking them if they would like to participate. These individuals were not informed that the key issue of the study dealt with impulsivity. Each individual interviewed was assured of confidentiality and informed that there would be no positive or negative consequences whether they agreed to participate in the experiment or not. Further, they were assured that none of the test results would become part of any institutional files and that no information would be released that might compromise their anonymity (See Subject Consent Form, Appendix A).

Of the 173 new residents admitted to the Assessment Unit, 164 (94.8%) volunteered to take part in the study. After IQ and educational testing, 77 of these were rejected (primarily for deficits in reading comprehension and written language skills). Of the remaining 87 subjects, three subjects found the testing to be somewhat tedious and withdrew from the study. An additional six subjects, for various reasons, were

transferred out of the Assessment Unit prior to completion of the test battery. Finally, one of the subjects was determined to be experiencing psychotic symptoms at the time of testing; his test results were therefore excluded from the study. Of the original 164 volunteers, 77 subjects were deemed suitable for the study, and completed the testing procedure.

Measures of Impulsivity

Matching Familiar Figures Test (MFFT). The adult form of the MFFT consists of 14 items (two practice and 12 test items). In each test item there is a drawing of a familiar object to be used as a sample. The subject is then required to look at a page which contains eight drawings that look similar to the sample, but only one of these is actually identical to the sample. Two dependent measures are recorded during the completion of each item: the time between presentation of the item and the first response (response latency) and the number of errors made in determining the correct match-to-sample. Heckel et al. (1989) suggest that having the subject continue to select alternate answers with feedback for each item

until he is correct will likely introduce contamination through learning and practice effects. This study therefore made use of the scoring method used by Heckel et al. (1989) in their normative studies. Latency scores are defined as the time elapsed between the presentation of each stimulus item and the first response summed together. Error scores are defined as the total number of stimulus items for which the first response was incorrect. Subjects were not given feedback as to the accuracy of their responses.

Minnesota Multiphasic Personality Inventory (MMPI). All subjects completed the full 566-item MMPI (Group Form). In addition to the standard validity and clinical scales, scores on several other research and supplementary scales were obtained, including A, R, Es, MAC, Cn, and Re.

The 50-item MMPI Control (Cn) scale was devised by Cuadra (1956). It is a measure that concerns itself with the extent to which behaviour indicated by elevated MMPI clinical scales will be exhibited in the presence of other people. A subject with a higher T-score on the Cn scale is more likely to be able to control the display of these behaviours, or the display

of those behaviours he/she wishes others to observe (Duckworth, 1986), while a lower score suggests that the subject lacks the ability to control the display of these behaviours.

In his summary of the Cn scale, Graham (1987) suggests that subjects who score high on this scale and who evidence significant psychological problems are better able to keep their problematic behaviours under control. Those who score low on the scale and have serious psychological problems are usually unable to control their problematic behaviours, and in some cases, may require institutional care. Clinical experience with this scale has suggested that it is related to problems with impulse control and there is some preliminary data to support this impression (Baxter, 1990). However, low Cn scores do not in themselves indicate psychopathology. "Interestingly, low Cn scores also are found among persons who are free of serious psychological problems" (Graham, 1987, p. 181).

Rather surprisingly, the Cn scale does not appear to have generated a great deal of research. In fact, the Cn scale does not exist as part of the MMPI-2 (the

updated and revised form of the MMPI), as a number of the items in the scale were dropped in the revision. Interestingly, Flanagan and Lewis (1974) found that recidivists had significantly higher T-scores on the Cn scale than did first offenders. Further to this, the addition of the Cn scale to a previously suggested MMPI aggression index (F + Pd + Ma) significantly improved the identification of high- vs. low-aggression police officers (Hargrave, Hiatt, & Gaffney, 1988).

The 32-item MMPI Social Responsibility (Re) subscale was derived from a 56-item scale originally devised by Gough, McClosky, and Meenl (1952) as part of a project concerning political participation. The older version of the Responsibility scale was reported to emphasize the degree to which values and controls are conceptualized and understood (Gough, 1965). The 32-item version is a measure of the extent to which the test-taker is concerned with "social and moral issues, disapproval of privilege and favor, emphasis on duties and self-discipline, conventionality versus rebelliousness, trust and confidence in the world in general, and poise, assurance, and personal security" (Gough, 1952, cited in Graham, 1987, p. 177). As with

the Cn scale, there is not a great deal of published research with the Re scale. However, Flanagan and Lewis (1974) found that Re scores were significantly lower in recidivists than in first offenders.

Graham (1987) suggests that those individuals who have high scores on the Re scale "have incorporated societal values and are committed to behaving in a manner consistent with those values. In addition, they place high value on honesty and justice" (p. 178). Further, Graham suggests that those with low scores on the Re scale "do not see themselves and are not seen by others as willing to accept responsibilities for their own behavior. They are lacking or deficient in dependability, trustworthiness, integrity, and sense of responsibility to the group." (p. 179). Conceptually, the Re scale seems to measure the degree to which an individual understands and accepts appropriate social values, and not necessarily how well the individual has behaved in accordance with them.

Measures of Interpersonal Problem-Solving Skills

Means-Ends Problem-Solving Procedure (MEPS). The MEPS consists of ten hypothetical scenarios that outline the beginning of a story where a desired goal is described, and the end, in which the desired objective is met (Platt & Spivack, 1977). The subject, in either verbal or written form, is asked to fill in the middle part of the story. A story may be scored in a number of ways, including the total number of relevant and irrelevant means, the enumeration of steps to the goal for each mean, the number of perceived obstacles to success, and number of means which demonstrate an awareness of a period of elapsed time. Although there are ten items in all, different numbers of items have been used in the past by different authors. In some cases, item content has been modified to suit the needs of researchers working with specific populations. These variations and lack of standardized use of the MEPS makes it difficult to establish their validity (Tisdelle & St. Lawrence, 1986). In spite of its frequently unstandardized use in some previous research, the MEPS has been used in many different settings and has successfully discriminated between

adjusted and maladjusted individuals in many different populations, as previously discussed.

All ten items were administered in the present study in order to conform to the methods originally suggested by the authors of the test (Platt & Spivack, 1977) and to permit a comparative examination of other suggested scoring procedures that have since evolved. In order to reduce the effects of test fatigue the test was administered in two parts, each consisting of five items. The second part of the test was administered during another testing session usually taking place 24 hours after the first part was given.

The Awareness of Consequences Test (ACT). This test is designed to evaluate an individual's ability to consider how his behaviour will affect himself and others, and what sort of reaction others may have to his behaviours. Each of the four items in the ACT is a short paragraph describing a scenario in which the protagonist is tempted to do something he shouldn't do (e.g., go off a diet, keep extra cash that a teller inadvertently gave him, etc.). The subject is asked to describe the protagonists' thoughts and subsequent actions in each story. Each response is scored

according to whether the subject indicates that there is a possibility of transgressing, that there is a consequence of transgressing, whether the consequences are internal or external, whether the protagonist does transgress or not, and whether the consequences of transgression are internal or external. The range of possible scores is 0 to 1.0, the higher scores indicating that the subject did in fact consider the actions and possible consequences (Platt & Spivack, 1977).

Ross and Fabiano (1985) recommend caution in the employment of this test due to the inadequacy of the psychometric research on it but go on to say that it does seem "to measure key aspects of the cognitive inadequacies which have been found in offenders" (p. 305). The test is included in the battery since it may offer supplementary information as to the nature of interpersonal problem-solving skills.

Optional Thinking Test (Alternative Thinking).

This test evaluates the ability of the test-taker to generate potential alternative behaviours for a problematic situation. The subject is presented with the four problematic situations comprising the test one

at a time and is asked to generate as many alternatives as he can. A set of standardized probing questions are provided in the test manual by Platt and Spivack (1977) to enable the examiner to elicit as many alternatives as possible. The scoring procedure is also standardized and is similar to the methods employed in scoring the MEPS.

Other Measures

Multiphasic Aptitude Battery (MAB). The MAB is a group-administered, multiple-choice intelligence test patterned after the Wechsler Adult Intelligence Scale--Revised (WAIS-R). The test has excellent psychometric properties in terms of internal consistency, validity, and test-retest reliability (Anastasi, 1988). It consists of a series of 10 multiple-choice subtests that yield a Full Scale IQ (FSIQ), Performance IQ (PIQ), and a Verbal IQ (VIQ), in the same manner as the WAIS-R. Of the ten subtests, nine bear the same scale names and evaluate approximately the same skills or abilities as the corresponding WAIS-R subtests. The remaining MAB subtest, "Spatial", corresponds to the WAIS-R subtest, "Block Design". There is no Digit Span equivalent. All MAB subtest scores are positively

correlated with their WAIS-R counterparts, with coefficients ranging from .44 for the Spatial/Block Design subtests to a high of .89 for the Arithmetic and Vocabulary subtests: The correlation coefficients are generally much higher for verbal subtests than for performance subtests. Correlations between the WAIS-R and MAB Verbal IQ, Performance IQ, and Full Scale IQ scores are excellent: .94, .79, and .91 respectively (Jackson, 1984). Moreover, the test appears to tap the same dimensions of intellectual ability as the WAIS-R (Krieshak & Harrington, 1985; Wallbrown, Carmin, & Barnett, 1988).

This test has some advantages that make it convenient for routine testing in a correctional setting. First, it yields much of the same information as the WAIS-R. Secondly, it can be administered in groups, thus saving considerable amounts of time and money relative to individual testing with the WAIS-R. Thirdly, it is simple and time-efficient to score. Finally, the MAB appears to be more objectively scored than the WAIS-R. As Vernon (1985) concludes, "its high correlation and equating with the WAIS-R make the

MAB a very attractive alternative to that test when individual administration is not required" (p. 508).

Tests of Adult Basic Education (TABE). The standardized test used to measure literacy skill level was the TABE, Survey Form "D". The survey form is a 90-item, timed, multiple-choice paper-and-pencil test that measures three areas commonly found in adult basic education curricula (McGraw-Hill, 1987a): Reading, Mathematics, and Language. Each of these sections is composed of two subtests. "Reading" is composed of Vocabulary and Comprehension; "Mathematics" includes Mathematics Computation and Mathematics Concepts and Applications; and "Language" includes Language Mechanics and Language Expression. The actual testing time required is 71 minutes, not including approximately 10 to 15 minutes required for giving test instructions and time to do practice items. The survey form yields a raw score, scaled scores, stanines, and a grade equivalent score that ranges from 0.0 to 12.9 to represent each grade from 0 to 13, with ten months of the school year represented after the decimal point. For example, an individual with a grade equivalent score of 7.3 could be expected to display the literacy

skills found among students in grade seven, in the third month of the academic year. Norms are available for adult basic education enrollees, adult offenders, juvenile offenders, and for vocational/technical school enrollees (McGraw-Hill, 1987b).

Similar versions of the TABE have proven useful in the research of literacy deficits in correctional settings. Bell, Conrad, and Suppa (1984) studied learning deficiencies in an U.S. adult offender population; Waksman, Silverman, and Weber (1983) studied Canadian adult inmates in two federal penitentiaries; and Loring and Romanelli (1988) surveyed adult and young offenders in provincial correctional facilities in Ontario.

Levinson Multidimensional Locus of Control Scale (LOC). The most widely used measure of locus of control has been Rotter's (1966) Internal-External Locus of Control Scale. However, research has shown that conflicting results may be obtained when attempting to differentiate between various adjusted and maladjusted groups. Levenson (1973) reasoned that "the I-E scale might not meaningfully relate to adjustment or clinical improvement because of the broad

definition of externals as those with expectancies that fate, chance, or powerful others control events" (p. 398). She therefore constructed three new scales (Internal, Powerful Others, and Chance) in order to measure belief in chance or fate expectancies as separate from a powerful others orientation. Levenson's (1973) revision of the scale was used in the present study.

There are 24 items in the test, eight for each of the three scales. Each item is presented in a six-point Likert scale format. The possible range of scores for each of the three scales is therefore 0 to 48. In her study of psychiatric patients, Levenson (1973) simplified the response tasks by having each subject handle cards with each item typed on them, and put each into one of six piles labelled from strongly agree to strongly disagree. In the present study, the items were presented in a paper and pencil format.

In the construction of the locus of control scales, Levenson (1972) used items from Rotter's I-E scale, and other items were added specifically for the newer scale. As some of these items were constructed for research in an hospital setting, the scale is

setting-specific to some degree. For the purposes of this study, the word "institution" was substituted for the word "hospital" in Levenson's items 4, 12, and 20, to make this test more suitable for an adult offender population.

Hogan Empathy Scale (HES). This scale is a 64-item scale derived by Hogan (1969, 1975) from a combined MMPI-CPI item pool. Hogan (1969) defined empathy as "the intellectual or imaginative apprehension of another's condition or state of mind without actually experiencing that person's feelings" (p. 308). As each item requires only a true or false response, it is simple and easy to score. According to Ross and Fabiano (1985), the Hogan Empathy Scale has been shown by research to be superior to other available empathy measures.

CPI Flexibility Scale (Fx). The Flexibility Scale is a subscale of the California Personality Inventory (CPI), comprising 22 true/false items (Megargee, 1972). Ross and Fabiano (1985) caution that "it is the least valid of the CPI scales and that whereas it does correlate negatively with measures of rigidity, it fails to relate positively to criteria of flexibility"

(p. 312). In spite of its possible shortcomings, this scale was included as a measure to explore the contribution of the flexibility-inflexibility dimension to cognitive impulsivity.

Gough Socialization (So) Scale. The So scale is a 54-item true/false paper and pencil test from the California Personality Inventory (CPI; Gough, 1957). Of all of the CPI scales, the So scale has been the one to receive most of the research attention from Gough and his associates (Megargee, 1972). According to Gough (1965), "the primary validation task of the socialization scale is to locate individuals and groups along a continuum of asocial to social behavior, and to forecast the likelihood that any person will transgress whatever dividing line his own culture interposes between these two poles of the continuum" (p.296). As Gough himself hypothesized in 1965:

The less socialized person was hypothesized to be less skilful in sensing and interpreting subtle and covert cues in social interaction, and hence less likely to evolve dependable and veridical internalized systems of control. Indirect evidence of such role-taking disability would be

found in rule-breaking and rule-violating behavior, and direct evidence would be found in tests of the accuracy of role perspectives and interpersonal diagnosis. (p.297)

On the basis of preliminary evidence, Gough (1965) went on to suggest that "although So is unrelated to intelligence, So is related to operant conditioning under social reinforcement" (p. 298). By this, Gough means to suggest that those individuals scoring lower on the So scale appear to be less responsive to social conditioning than those who score higher on the scale. The Re and So scales measure different but related skills: The Re scale emphasizes the degree to which values and controls are conceptualized and understood, while the So scale reflects the degree to which social values are internalized and made operational by that individual.

Heppner Problem-Solving Inventory (PSI) The PSI (Heppner & Peterson, 1982) is a 35-item paper and pencil test employing a 6-point Likert scale for each item. The test is designed to measure how individuals believe they generally react to personal problems (e.g., getting along with friends, feeling depressed,

choosing a career, etc.) in their daily life (Corcoran & Fischer, 1987). After administering the 35 items comprising the PSI to two subject samples (N = 150 and 62), Heppner and Peterson (1982) were able to derive three factors: Problem Solving Confidence (PSC), Approach-Avoidance Style (AAS), and Personal Control (PC). In addition, the total score is calculated as a general index of problem-solving perception. It is important to note that the PSI does not measure actual problem-solving skills but rather the self-perception of the test taker's general reaction to problematic situations. According to the authors:

The initial estimates of validity suggest that the instrument is measuring constructs that are (a) amenable to change through specific skill training in problem solving, (b) unrelated to conceptualizing means to solving a hypothetical problem situation, (c) related to general perceptions of problem-solving skills, (d) unrelated to intelligence or social desirability, and (e) related to personality variables, most notably locus of control. (Heppner & Peterson, 1982, p. 66)

The PSI was constructed in such a manner that the lower the score, the greater the test-taker's confidence in his problem-solving ability. This sometimes leads to some difficulty in conceptualizing scores, particularly when contrasting PSI scores with other variables.

Criminal Sentiments Scale (CSS). The CSS (Andrews, 1980) is a 41-item paper and pencil test that employs a 5-point Likert scale for each item. The test yields three major scales: Law, Courts, and Police (LCP), a measure reflecting respect for the law and justice system; Tolerance of Law Violations (TLV), a measure of the extent to which the test taker accepts specific justifications for illegal activity; and Identification with Criminal Others (ICO), a measure of the test-taker's judgements of others who have engaged in criminal activity.

These measures have evolved over time from items found in use in the Connecticut correctional system (Andrews & Wormith, 1984) and modified by Gendreau, Grant, Leipziger, and Collins (1979). Subsequent investigations of the properties of these measures (Andrews, 1980) resulted in further modification of the

scales, and a fairly good understanding of their psychometric properties (Andrews & Wormith, 1984; Andrews, Wormith, & Kiessling, 1985; Roy & Wormith, 1985). The CSS was included in the present study to see if there were any attitudinal differences of significance among the sample groups and secondarily to examine the relationship between it and the other dependent measures.

Level of Supervision Index (LSI). The LSI-VI (Andrews, 1982) is a 58-item checklist that surveys ten different content areas that have been linked to recidivism (Criminal History, Education/Employment, Financial, Family/Marital, Accommodation, Leisure/Recreation, Companions, Alcohol/Drug Problems, Emotional/Personal, and attitudinal factors), which also yields a total LSI score. The checklist is completed in a structured interview in combination with a review of official records (Bonta, 1988). The task of the LSI is to objectively assess the needs and risk levels of the adult offender in order to correctly match the level of supervision required by an individual to his risk level. The instrument has been studied since the late 1970s and has been used with

probationers, parolees, and those undergoing a selection process for halfway houses. Current studies are examining the efficacy of the LSI in the classification of inmates to different institutional security levels (Bonta, 1988).

Research with parolees and probationers have demonstrated that LSI scores have successfully predicted the occurrence of technical violations and future criminal behaviour (Andrews, 1982). The results of two studies conducted by Bonta and Motiuk (1985) showed that LSI scores predicted successful completion of halfway house placement and recidivism one year following the completion of their sentences. Further, there is evidence to suggest that certain content areas of the LSI predicted future risk, and that some of these areas are sensitive to treatment effects. According to Bonta (1988), "This is significant in that it has linked the offender's needs with their actual risk for future rule violations" (p.5). The instrument was included in the present study to provide some additional information regarding its relationship with the other dependent measures, and to provide

information for future studies of recidivism rates in impulsive versus non-impulsive offenders.

Measures of Institutional Adjustment

At RTC, all residents are rated weekly in a token economy/incentive system for each of the activities in which he has participated or has been required to participate during the previous week. This includes treatment programs (the Mutual Aid Program--a daily milieu therapy regime, and other specialized programs), academic and trades training programs, institutional work placements, and general behaviour in the dormitory (Dorm Ratings). Residents are rated on a 5-point scale, ranging from 1 (poor, unacceptable) to 3 (satisfactory) to 5 (outstanding, excellent) by the supervisor or coordinator of that particular activity. Ratings of 3-5 are rewarded with points while ratings of less than 3 result in negative points. As these points accumulate over time, the resident is rewarded or punished by increases or decreases respectively in Rating System Levels. The levels range from 1 to 4, with increasing privileges at higher levels. Several measures derived from these weekly ratings were therefore used as indices of institutional adjustment.

Additionally, for major or persistent infractions of institutional rules and regulations, residents are placed on "misconduct", with penalties ranging in severity from loss of privileges to administrative segregation with restricted diet. Thus, number of misconducts was used as a measure of more serious institutional maladjustment.

Procedure

Residents were typically admitted to the Assessment Unit in groups of three to seven. All new residents (except for a very small number of those who refused) completed a complete psychological test battery which included the MMPI or its revised version (the MMPI-2), the MAB, the TABE (Survey Form D), and the CSS. Testing was typically conducted over a three day period, with breaks provided during all testing sessions dependent upon the characteristics and requirements of each test. The additional measures used in this study (MEPS, Optional Thinking Test, etc.) were administered after completion of the usual assessment battery in groups no larger than five at a time.

Given that each subject completed both the standard assessment battery and the additional test battery, every effort was made to ensure that the probability of test fatigue was minimized. Typically, the Assessment Unit battery was completed first, and the remaining tests were completed the following week. Toward the latter part of the study, the order was reversed such that the experimental battery preceded the Assessment Unit battery by one to three weeks. Both batteries were administered prior to the subjects' discharge from the Assessment Unit.

Following completion and scoring of all testing, the experimenter and a cohort (a Registered Psychologist with 15 years of experience in forensic/correctional assessment) independently reviewed each subject's criminal and social history files, supplemented by interviews with individual subjects. Subjects were then assigned to one of three groups based on the following criteria:

Nonimpulsive Group (Group "NON"). For each subject within this group, (a) there was no evidence of a history of impulsive behaviour; and (b) there was evidence that all criminal or antisocial acts were

planned in advance and were to some degree instrumental (the perceived consequences of the successful criminal act would serve to benefit the subject in a manner that he would have seen as positive).

"Disinhibited" Nonimpulsive Group (Group "DIS").

For each subject in this group, (a) behaviour was generally consistent with the criteria listed above, but showed evidence of occasional impulsive episodes; (b) criminal or antisocial acts were committed that showed no evidence of planning but were associated with some disinhibiting event or factor, such as a period of extraordinary stress, a traumatic personal event, an intense emotional state (e.g., depression, high anxiety), peer influence (e.g., as may sometimes be seen with "gang rape" syndrome), or were clearly attributable to intoxication by alcohol or drugs; and (c) the number of criminal or antisocial acts was relatively low and the subject showed a history of long time periods in which good impulse control was demonstrated.

Impulsive Group (Group "IMP"). For each subject within this group, (a) criminal or antisocial acts generally appeared to be unplanned; (b) there was evidence of repeated instances of impulsive behaviours over time; and (c) there was historical evidence to suggest that there is chronic undercontrol of behaviour, with documented examples available.

The experimenter and his cohort met periodically to compare group assignment decisions for each subject. In the event of disagreement on any given case, they attempted to arrive at a consensus and, if a consensus could not be reached, that subject was to be excluded from the study. The experimenter and his cohort independently assigned 51 subjects (66%) in the same manner, requiring discussions only for the remaining 26 subjects. It was unnecessary to exclude any subjects from the study because of a failure to achieve consensus. The final categorizations resulted in $N = 22, 39, \text{ and } 16$ respectively for the Impulsive (IMP), Disinhibited Nonimpulsive (DIS), and Nonimpulsive (NON) groups.

Given the somewhat subjective nature of the MEPS scoring procedure, a face sheet was provided at the

front of each half of the answer booklet. The face sheet contained the only identifying information regarding the subject and was removed by the cohort. A random number was then generated and recorded on both the face sheets and the answer booklets such that the experimenter was blind to the test-taker's identity. After all scoring and classifications were complete, the numbers were then used to match the test scores with the subjects.

RESULTS

Oneway analyses of variance with post-hoc Student-Newman-Keuls procedures were employed where appropriate. Categorical variables were analyzed using the chi-square statistic with correction for low cell frequencies. Pearson product-moment correlation coefficients (2-tailed) were used in the construction of correlational matrices. Analyses of covariance procedures were employed when it was considered appropriate to partial out the effects of one variable upon another.

Characteristics of the Total Sample

At the time of admission, the mean age of the subject sample was 27.68 years, ranging from 18 to 48 years. The average number of years of education was 10.41, with a range of 8 to 17 years. As measured by the MAB, the mean FSIQ was 99.35, ranging from 80 to 123 (See Table 1). These data are comparable to those

Table 1

Characteristics of the Total Sample

	<u>Mean (S.D.)</u>	<u>Range</u>
Age	27.68 (6.93)	18-48
Education	10.41 (2.01)	8-17
MAB Verbal IQ	106.58 (9.22)	80-115
MAB Performance IQ	106.58 (11.75)	77-133
MAB Full Scale IQ	99.35 (9.61)	80-123
# Prior Convictions	11.43 (12.54)	0-64
# Prior Incarcerations	3.68 (3.88)	0-19
# Prior Property Offenses	5.51 (7.09)	0-29
# Prior Alcohol/Drug Offenses	1.70 (2.63)	0-10
# Prior Assaultive Offenses	0.61 (1.22)	0-6
# Prior Sexual Offenses	0.08 (0.70)	0-6
# Other Prior Offenses	3.41 (5.60)	0-37
# Current Property Offenses	1.99 (2.28)	0-12
# Current Alc/Drug Offenses	0.68 (1.30)	0-7
# Current Assaultive Offenses	0.49 (0.93)	0-4
# Current Sexual Offenses	0.08 (0.40)	0-3
# Other Current Offenses	2.01 (3.23)	0-23

presented in the Ontario Ministry of Correctional Services Annual Report (1989), as are criminal history characteristics presented in Table 1.

Group Characteristics

There was a significant difference in age at testing among the three groups, $F(2, 72) = 4.51, p < .05$. A roughly linear relationship was observed, with Impulsive subjects significantly younger than subjects in either of the other two groups (see Table 2). No significant differences were found among the groups for mean education level, $F(2, 72) = 1.52, p = .23$, VIQ, $F(2, 71) = 1.65, p = .20$, PIQ, $F(2, 71) = .58, p = .56$, or FSIQ, $F(2, 71) = 1.28, p = .29$. For MAB subtest scaled scores, a significant difference was noted among the group means only for Comprehension, $F(2, 71) = 3.41, p < .05$, with both the Disinhibited and Nonimpulsive groups scoring significantly higher than the Impulsive group. This difference was no longer statistically significant after the effects of age were partialled out, $F(1, 70) = 2.13, p = .13$. No other significant differences were found, although mean scores were lower for the Impulsive group than for either of the other two groups on all subtests except Spatial.

Table 2

Mean (and standard deviations) for age, years of education, and MAB scores for each group.

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>	
N	21	37	16	
Age	24.19 (4.77)	28.47 (6.83)	30.38 (8.07)	*
Education	9.90 (1.92)	10.42 (1.87)	11.06 (2.38)	
VIQ	91.86 (8.47)	96.27 (9.37)	95.75 (9.43)	
PIQ	104.33 (11.84)	107.81 (12.75)	106.69 (9.20)	
FSIQ	96.62 (9.37)	100.78 (10.12)	99.63 (8.41)	
Information	41.29 (7.24)	43.70 (6.90)	42.44 (5.51)	
Comprehension	44.05 (8.42)	48.65 (7.06)	49.25 (5.21)	*
Arithmetic	49.33 (7.69)	51.68 (7.09)	49.50 (9.03)	
Similarities	49.24 (4.63)	50.84 (6.05)	50.94 (7.73)	
Vocabulary	43.67 (4.95)	44.57 (7.22)	45.63 (7.46)	
Digit Symbol	51.10 (8.37)	52.46 (6.34)	54.56 (7.29)	
Picture Completion	50.10 (4.94)	51.86 (7.17)	51.31 (4.35)	
Spatial	58.10 (10.58)	55.00 (11.50)	56.88 (8.17)	
Picture Arrangement	53.62 (8.77)	57.57 (8.19)	54.56 (9.74)	
Object Assembly	47.19 (7.96)	51.68 (8.81)	49.31 (7.70)	

* $p < .05$

Measures of Impulsivity

There were no differences among the three groups for MFFT total latency, $F(2, 74) < 1$ (see Table 3), but the groups did differ with respect to MFFT total error score $F(2, 74) = 3.24$, $p < .05$. The Disinhibited group had significantly higher error scores than the Impulsive group, but there were no significant differences between the Disinhibited and the Nonimpulsive groups. The Impulsive group had the lowest number of total errors. A correlation was found between total error score and FSIQ, but the differences between the groups remained significant after the effects of FSIQ were partialled out, $F(1, 70) = 6.27$, $p < .01$.

All validity and clinical scales of the MMPI were analyzed separately (see Table 4). The F scale approached significance, $F(2, 71) = 2.69$, $p = .08$, as did scale 4 (Psychopathic Deviate) $F(2, 71) = 2.73$, $p = .07$. Significant differences were found among the groups on scales 6 (Paranoia), $F(2, 71) = 2.91$, $p < .05$, and 9 (Hypomania), $F(2, 71) = 3.76$, $p < .05$, with Impulsives scoring higher than both the Disinhibited and

Table 3

Matching Familiar Figures TestLatency (Seconds)

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
N	22	39	16
Item 1	21.41 (15.29)	21.01 (17.34)	25.50 (18.28)
Item 2	23.97 (16.57)	22.73 (17.53)	22.06 (16.26)
Item 3	33.56 (18.54)	29.66 (29.22)	42.28 (30.84)
Item 4	27.62 (14.98)	28.38 (25.80)	32.57 (19.02)
Item 5	33.30 (18.56)	37.65 (42.51)	46.08 (33.27)
Item 6	21.70 (10.34)	21.51 (13.41)	24.39 (10.46)
Item 7	33.04 (21.59)	32.38 (26.86)	45.08 (33.95)
Item 8	32.45 (15.12)	38.59 (39.31)	50.25 (31.74)
Item 9	38.10 (33.87)	30.27 (20.78)	34.60 (18.51)
Item 10	30.65 (13.18)	35.70 (26.09)	47.30 (25.01)
Item 11	42.33 (35.78)	32.34 (26.22)	42.02 (27.22)
Item 12	30.06 (12.65)	28.20 (17.74)	33.59 (19.92)
Total	368.19 (189.30)	359.59 (266.79)	455.27 (218.92)

Errors

Item 1	.45 (.51)	.87 (.34)	.69 (.48)	
Item 2	.64 (.49)	.85 (.37)	.94 (.25)	*
Item 3	.64 (.49)	.85 (.37)	.63 (.50)	
Item 4	.55 (.51)	.62 (.49)	.63 (.50)	
Item 5	.73 (.46)	.74 (.44)	.44 (.51)	
Item 6	.36 (.49)	.59 (.50)	.44 (.51)	
Item 7	.68 (.48)	.67 (.48)	.69 (.48)	
Item 8	.68 (.48)	.74 (.44)	.69 (.48)	
Item 9	.36 (.49)	.51 (.51)	.31 (.48)	
Item 10	.36 (.49)	.46 (.51)	.25 (.45)	
Item 11	.45 (.51)	.44 (.50)	.50 (.52)	
Item 12	.27 (.46)	.38 (.49)	.50 (.52)	
Total	6.18 (2.59)	7.72 (2.27)	6.75 (2.11)	*

*p<.05

Table 4

MMPI Validity and Clinical Scales (T-scores)

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>	
N	21	37	16	
Scale				
L	48.76 (6.98)	52.41 (6.58)	52.50 (6.65)	
F	67.24 (14.46)	61.97 (13.88)	56.94 (10.91)	+
K	48.81 (7.30)	51.49 (8.26)	53.25 (10.29)	
1	52.48 (8.94)	59.08 (12.65)	59.13 (15.97)	
2	61.57 (14.62)	64.97 (11.61)	62.44 (10.17)	
3	58.33 (9.58)	58.54 (8.83)	57.50 (10.67)	
4	79.10 (11.63)	72.81 (11.95)	70.75 (11.86)	+
5	60.52 (10.24)	60.35 (8.18)	58.50 (9.22)	
6	67.67 (12.21)	61.11 (10.72)	60.44 (9.44)	*
7	64.90 (12.59)	62.92 (12.34)	61.13 (15.08)	
8	66.24 (15.37)	61.22 (17.30)	60.75 (18.15)	
9	72.62 (8.85)	65.65 (11.15)	64.13 (11.66)	*
0	53.62 (12.04)	55.16 (11.04)	52.38 (13.44)	

+ .05<p<.10

* p<.05

Nonimpulsive groups. Moreover, the mean T-score for scale 9 was in the clinical range ($T \geq 70$) only for the Impulsive group. No other significant differences were found.

Nine supplementary scales were also analyzed (see Table 5). No significant differences were found among the groups on the A (Anxiety), R (Repression), Es (Ego Strength), MAC (MacAndrew), Cn (Control), Do (Dominance), or Dy (Dependency) scales. It was found, however, that the Nonimpulsive group scored significantly higher, $F(2, 71) = 3.40, p < .05$, than the Impulsive group on the Re (Social Responsibility) scale. As stated earlier, elevations on scales 4, 6, 8, and 9 are considered to be associated with impulsivity (Graham, 1977). The mean of these four scales was calculated to provide an impulsivity index (MMPI-A). The Impulsive group obtained a significantly higher mean impulsivity index $F(2, 71) = 3.21, p < .05$, than either the Disinhibited group or the Nonimpulsive group, while the latter two groups did not differ on this index (see Table 6); again, for mean group T-scores, only the Impulsive group scored in the clinical range for this index. There was, however, a

Table 5

MMPI Supplementary Scales (T-scores)

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
N	21	37	16
Scale			
A	57.38 (9.37)	54.11 (10.78)	50.25 (13.96)
R	42.90 (10.35)	47.65 (8.90)	48.31 (9.21)
Es	48.14 (8.38)	48.41 (9.92)	50.06 (9.63)
MAC ¹	30.24 (3.52)	29.54 (7.07)	27.44 (4.11)
Do	44.38 (10.97)	45.16 (12.63)	45.25 (11.56)
Re	35.67 (8.58)	40.41 (9.39)	43.75 (11.12) *
N	20	35	13
Scale			
Cn	63.70 (8.93)	59.43 (11.25)	56.62 (15.79)
Dy	55.75 (10.18)	55.69 (10.60)	55.85 (12.95)

*p<.05

¹ Raw scores

Table 6

MMPI Impulsivity Indices

MMPI-A (Scale 4 + Scale 6 + Scale 8 + Scale 9) / 4

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
N	21	37	16
Mean	71.40 (8.87)	65.20 (10.66)	64.02 (10.58) *

MMPI-B [(Scale 4 + Scale 6 + Scale 8 + Scale 9) /4] - CN)

N	20	35	13
Mean	8.44 (9.05)	6.04 (10.75)	10.13 (13.90)

MMPI-C [(Scale 4 + Scale 6 + Scale 8 + Scale 9) /4] /Cn

N	21	37	16
Mean	1.15 (.16)	1.13 (.20)	1.26 (.40)

* $p < .05$

significant negative correlation found between the impulsivity index and age; after the effects of age were partialled out, the differences in MMPI-A were no longer significant, $F(1,70) = 1.37$, $p=.26$. Two other indices including the Cn scale were examined (MMPI-B and MMPI-C) but were not found to differentiate between the groups, $F(2,65) = .76$, $p=.47$ and $F(2,65) = 1.58$, $p=.21$ respectively).

Intercorrelations among the impulsivity measures are summarized in Table 7. There was a significant negative correlation between MFFT latency and error scores. The MFFT latency score (but not error score) was positively correlated with education, while MFFT error score was negatively correlated with FSIQ.

Measures of Problem-Solving Ability

The total scores for the problem-solving tests are summarized in Table 8. No significant differences were found in any of the total scores of the Awareness of Consequences Test, Heppner's Problem-Solving Confidence Test, or the Optional Thinking Test.

For the MEPS, the scoring procedure suggested by Platt and Spivack (1977) was employed. For each item, the total means, obstacles, and time elements were

Table 7

Correlations of Measures of Impulsivity

	MFFT Latency	MFFT Errors	MMPI-A
MFFT Latency	1.00		
MFFT Errors	-.58**	1.00	
MMPI-A	.03	-.10	1.00
Age	.18	.05	-.36*
Education	.31*	-.20	-.19
FSIQ	.18	-.30*	-.01

* $p < .01$ ** $p < .001$

Table 8

Measures of Problem-Solving SkillsAwareness of Consequences Test (Temptation Stories)

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
N	22	38	16
Item 1	.99	1.00	1.00
Item 2	.70	.82	.81
Item 3 (Int)	.57	.72	.69
Item 3 (Ext)	.18	.12	.17
Item 4	.36	.28	.28
Item 5 (Int)	.24	.16	.14
Item 5 (Ext)	.10	.11	.11

Optional Thinking Test

N	22	39	16
Alternatives	15.00	15.69	15.63
Enumerations	6.41	7.64	9.94
Irrelevant Alt	2.77	1.98	2.13
No Alternatives	.05	.05	.19

Means-Ends Problem Solving Procedure (Means + Obstacles + Time)

N	22	39	16	
Item 1	3.23 (1.66)	3.23 (1.58)	4.50 (1.93)	*
Item 2	5.00 (1.77)	6.00 (2.44)	5.19 (2.01)	
Item 3	3.95 (1.59)	4.74 (1.70)	4.25 (1.88)	
Item 4	4.18 (1.65)	5.23 (2.16)	4.44 (2.28)	
Item 5	6.00 (1.95)	5.85 (2.75)	6.75 (3.09)	
Item 6	7.23 (1.80)	7.46 (1.98)	7.69 (1.96)	
Item 7	5.23 (2.45)	6.28 (3.63)	6.94 (3.87)	
Item 8	4.32 (1.55)	4.82 (1.57)	5.50 (1.59)	*
Item 9	3.95 (1.81)	4.79 (1.87)	4.44 (2.76)	
Item 10	4.05 (1.25)	5.44 (1.73)	5.31 (2.12)	**

Ten Item MEPS Test

47.14 (7.52) 53.85 (12.97) 55.00 (14.65) *

Seven Item MEPS Test (Items 1,2,4,5,6,8,9)

33.91 (6.14) 37.38 (8.76) 38.50 (9.59)

Platt et al. (1973) Three Item MEPS Test (Items 2,4,7)

14.41 (5.17) 17.51 (8.95) 16.56 (8.36)

Impulsivity MEPS Test (Items 1,8,10)

11.59 (2.52) 13.49 (3.50) 15.31 (4.51) **

Table 8 (con't)

Measures of Problem-Solving SkillsProblem-Solving Inventory (PSI)

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
N	22	39	16
PSC	27.91 (10.10)	25.38 (9.17)	24.63 (6.56)
AAS	49.64 (9.59)	47.41 (15.59)	47.81 (10.55)
PC	19.32 (4.67)	18.05 (6.80)	16.88 (6.48)
Total	96.86 (17.15)	90.85 (27.67)	89.31 (21.34)

+.05<p<.10

*p<.05

**p<.01

summed as suggested by Spivack, Shure, and Platt (1985). Item 1 significantly differentiated among the groups $F(2, 74) = 3.63, p < .05$, with the Nonimpulsive group scoring higher than the other two groups. Item 10 also differentiated among the groups $F(2, 74) = 5.02, p < .01$, with the Impulsive group scoring significantly lower than the other two groups. Differences for Item 8 approached significance ($F(2, 74) = 2.62, p = .08$), with the Nonimpulsive group scoring higher than the other two groups. The complete 10-item test score (Platt & Spivack, 1977) was found to successfully discriminate the impulsive group from the other two groups $F(2, 74) = 2.73, p < .05$, but the 7-item test combination recommended by Platt and Spivack (1985) did not, $F(2, 74) = 1.75, p = .18$. The three-item version employed by Platt, Scura, and Hannon (1973) also failed to differentiate between the three groups, $F(2, 74) = 2.09, p = .13$. Another combination of items was assembled using the two test items that successfully differentiated between the groups (Items 1 and 10), and the item that approached significance (Item 8). This particular combination of items was highly significant $F(2, 74) = 5.33, p < .01$, revealing a

linear relationship, with the Impulsive group scoring the lowest, and the Nonimpulsive group scoring the highest. Further, a content analysis revealed that all three items require a common specific set of interpersonal skills to successfully resolve: the ability to conceptualize means necessary to obtain social approval from others (strangers, friends, and a boss). However, age, education, and FSIQ were all significantly correlated with this combination of items, and after their effects were partialled out, the difference was no longer significant, $F(2,73) = 1.69$, $p = .19$.

Correlational data is presented in Table 9. The three item MEPS combination created above (MEPS-IMP), correlated significantly with age, education, FSIQ, and both the So and Re scales. The 10-item version of the MEPS (MEPS-10), correlated significantly with the PSI total score while MEPS-IMP did not, suggesting that the PSI is really measuring generalized problem-solving ability as opposed to one smaller content area, as it purports to do. Highly significant correlations were found between the MMPI impulsivity index (MMPI-A) and age, and the So and Re scales, showing that the lower

Table 9

Correlations of Problem-Solving Measures

	<u>MEPS</u>		<u>PSI</u>		<u>PC</u>		<u>Total</u>	<u>A</u>	<u>So</u>	<u>Re</u>
	<u>10</u>	<u>IMP</u>	<u>PSC</u>	<u>AAS</u>						
MEPS(10)	1.00									
MEPS(IMP)	.82**	1.00								
PSI (PSC)	-.36**	-.30*	1.00							
PSI (AAS)	-.25+	-.17	.60**	1.00						
PSI (PC)	-.29+	-.13	.34*	.60**	1.00					
PSI (Total)	-.35*	-.24+	.80**	.93**	.72**	1.00				
MMPI-A	-.20	-.26+	.30*	.15	.11	.22	1.00			
So	.22	.34*	-.31*	-.37**	-.24+	-.38**	-.52**	1.00		
Re	.20	.33*	-.15	-.29+	-.22	-.27+	-.58**	.53**	1.00	
Age	.31*	.38**	-.05	-.06	-.18	-.10	-.36**	.40**	.49**	
Education	.39**	.46**	-.16	-.19	-.24+	-.22	-.19	.29+	.44**	
FSIQ	.40**	.33*	-.18	-.05	-.06	-.11	-.01	.10	-.05	

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

the score or age, the higher the impulsivity index. Both the So and Re scales were significantly intercorrelated and they both significantly correlated with age and education, but not with IQ. The PSI correlated significantly with the So scale, and after the effects of the So scale are partialled out, the differences between the groups for PSI are no longer significant, $F(1,73) = .08$, $p=.93$.

Measures of Other Cognitive Qualities

No significant differences were found among the three groups on Gough's Flexibility Scale, $F(2, 72) = .76$, $p=.47$, Hogan's Empathy Scale, $F(2, 74) = 1.22$, $p=.30$, or on Levenson's Locus of Control Scale, $F(2, 74)$, Chance = .04, $p=.96$, Powerful Others = 1.25, $p=.29$, Internal = .59, $p=.56$. However, both the Disinhibited and Nonimpulsive groups scored significantly higher than the Impulsive group on the Socialization Scale $F(2, 74) = 8.44$, $p<.01$. A significant correlation was found between the So scale and age, but the differences in So score remained significant with the effects of age partialled out, $F(3,68) = 3.96$, $p<.05$. The results of these tests are

summarized in Table 10, and the correlational data are presented in Table 11.

The Fx scale correlated significantly (negatively) with the locus of control (Powerful Others) scale, showing that the less influence powerful others are ascribed, the higher the flexibility score. The HES correlated significantly with the So scale and Education, and again, with the LOC (PO) scale, showing that the higher the HES scale, the less the LOC (PO) score, and the greater the So score and education. Interestingly, the lower the LOC(I) score, the higher the MMPI-A score, showing that for this sample, the more impulsive the subject, the less each subject ascribed his locus of control internally. The So and Re scales were significantly correlated, and both discriminated among the groups. A significant interaction was observed between So and Re, and even with the effects of the Re variable partialled out, the differences between the groups on the So scale remained significant $F(1,70) = 4.48, p < .05$. The correlation between the So scale and FSIQ was not significant (.10), contrary to findings of O'Mahoney and Murphy (1991). Age and education significantly correlated

Table 10

Other Cognitive Measures

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
<u>N</u>	22	39	16
<u>Flexibility Scale (Fx)</u>			
	9.59 (3.61)	8.77 (4.14)	8.06 (3.30)
<u>Empathy Scale (HES)</u>			
	33.59 (7.28)	35.36 (6.75)	37.06 (6.28)
<u>Locus of Control Scale (LOC)</u>			
Chance	23.27 (7.03)	23.72 (7.51)	23.93 (7.95)
Powerful Others	20.45 (6.91)	22.38 (7.12)	24.19 (7.99)
Internal	37.50 (4.32)	38.90 (5.42)	37.75 (5.53)
<u>Socialization Scale (So)</u>			
	20.64 (5.30)	26.51 (6.86)	28.00 (5.62) **

**p<.01

Table 11

Correlations of Other Cognitive Measures

	Fx	HES	LOC (C)	LOC (PO)	LOC (I)	So	Re	A
Fx	1.00							
HES	.33*	1.00						
LOC (C)	-.21	-.23+	1.00					
LOC (PO)	-.38**	-.29+	.68**	1.00				
LOC (I)	-.35*	.10	-.17	.06	1.00			
So	-.15	.35*	-.26+	-.03	.25+	1.00		
Re	.03	.34*	-.26+	-.12	.26+	.53**	1.00	
MMPI-A	.09	-.25+	.24+	.13	-.32*	-.52**	-.58**	1.00
Age	-.05	.09	-.14	.04	.25+	.40**	.49**	-.36*
Education	.15	.40**	-.14	-.01	.14	.29+	.44**	-.19
FSIQ	.16	.25+	-.26	-.08	-.04	.10	-.05	-.01

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

with scores on the Re scale, and after these variables and FSIQ are partialled out, the differences between the groups on the Re scale are no longer significant $F(3,68) = .82, p=.45$.

Attitudes and Criminal Influences

For the Criminal Sentiments Scale, no differences among the groups were found on the Law, Courts, and Police subscale, $F(2, 71) = 1.92, p=.15$, nor on Identification with Criminal Others, $F(2, 71) = .08, p=.93$. However, the Impulsive group scored significantly higher than either the Disinhibited or Nonimpulsive groups on Tolerance for Law Violations, $F(2,71) = 4.12, p<.05$ (see Table 12). A significant correlation was found between Tolerance for Law Violations and education; however, with the effects of age, education, and FSIQ partialled out, the scale still discriminated among the groups, $F(3,59) = 3.24, p<.05$. In addition, the Impulsive subjects were significantly more likely to have criminal associates in the community than the Disinhibited subjects, $\chi^2(2, N = 73) = 3.08, p<.05$. No differences were found among the three groups in likelihood of noncriminal associates, $\chi^2(2, N = 73) = .99, p=.61$.

Table 12

Attitudes and Criminal Influences

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>	
N	21	37	16	
<u>Criminal Sentiments Scale</u>				
LCP	81.67 (15.11)	89.35 (17.17)	90.19 (12.82)	
TLV	29.67 (6.38)	25.78 (5.96)	24.50 (5.34)	*
ICO	15.43 (3.53)	15.30 (3.44)	15.69 (2.89)	
<u>Level of Supervision Index</u>				
N	19	33	14	
Total	27.74 (5.10)	21.39 (6.35)	20.71 (6.45)	***
Criminal	6.79 (2.10)	5.85 (1.82)	6.00 (1.96)	
Educ/Emp	5.63 (2.22)	3.12 (1.83)	2.43 (1.79)	****
Financial	.63 (.68)	.79 (.74)	.57 (.76)	
Fam/Mar	1.47 (1.26)	1.39 (1.03)	1.43 (1.16)	
Accomm	.84 (.83)	.36 (.60)	.29 (.47)	*
Leis/Rec	1.53 (1.17)	1.03 (.77)	1.07 (.92)	
Companions	2.26 (1.41)	1.79 (1.49)	1.86 (.95)	
Alc/Drug	5.37 (2.09)	5.00 (1.95)	4.29 (2.30)	
Emotional	2.47 (1.50)	1.82 (1.42)	1.57 (1.83)	
Attitude	1.00 (1.00)	.48 (.67)	1.21 (1.12)	*
N	21	37	15	
<u>Criminal Associates</u>				
Yes	20	25	13	
Percent	95.2	67.6	86.7	*
<u>Non-criminal Associates</u>				
Yes	21	36	15	
Percent	100.0	97.3	100.0	

* p<.05
 *** p<.001
 **** p<.0001

2 of/de 2

PM-1 3½" x 4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT

PRECISIONSM RESOLUTION TARGETS

PIONEERS IN METHYLENE BLUE TESTING SINCE 1974

MicroD

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Ten scores were derived from the Level of Supervision Index, in addition to the total LSI score (see Table 12). For LSI total score, there was a significant difference among the three groups, $F(2, 63) = 8.00$, $p < .001$, with the Impulsive group scoring significantly higher than both of the other groups. A significant correlation was found between LSI total score and FSIQ; however, the differences between the groups remained significant after the effects of age, education, and FSIQ were partialled out, $F(3, 59) = 4.93$, $p < .05$. There were also differences among the groups in three of the ten subscales of the LSI. The Impulsive group scored higher than both other groups on the Education/Employment subscale, $F(2, 63) = 13.88$, $p < .0001$, and on the Accommodation subscale, $F(2, 63) = 4.04$, $p < .05$. The Disinhibited group scored significantly lower than the other two groups on the Attitude/Orientation subscale, $F(2, 63) = 4.17$, $p < .05$.

Correlational data is summarized in Table 13. The LSI correlated significantly with all three subscales of the CSS in the expected directions. The higher the LSI scores, the lower was the Law, Courts, and Police scale, and the higher was Tolerance for Law Violations

Table 13

Correlations for Attitudes and Criminal Influence Measures

	CSS (LCP)	CSS (TLV)	CSS (ICO)	LSI	So	Re	A
CSS (LCP)	1.00						
CSS (TLV)	-.66**	1.00					
CSS (ICO)	-.51**	.59**	1.00				
LSI	-.31+	.39**	.35*	1.00			
So	.37**	-.40**	-.36*	-.62**	1.00		
Re	.59**	-.54**	-.54**	-.33*	.53**	1.00	
MMPI-A	-.46**	.40**	.34*	.43**	-.52**	-.58**	1.00
Age	.26+	-.25+	-.24	-.26+	.40**	.49**	-.36*
Education	.21	-.35*	-.30*	-.32*	.29+	.44**	-.19
FSIQ	-.01	.07	-.09	-.39**	.10	-.05	-.01

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

and Identification with Criminal Others. All three CSS scales were significantly correlated with the So and Re scales and the MMPI impulsivity index. In addition, age significantly correlated with the Law, Courts and Police scale, education significantly correlated with Identification with Criminal Others, and both age and education correlated significantly with Tolerance for Law Violations. After the effects of the Re scale were partialled out, the differences between groups for Tolerance for Law Violations only approached significance, $F(1,69) = 2.72, p=.07$. With both the Re and So scales partialled out, the differences diminish further, $F(2,68) = 2.05, p=.14$. The total LSI score was significantly correlated with the So and Re scales. Once the effects of the So scale were partialled out, the differences between the groups were no longer significant, $F(1,62) = 2.10, p=.13$.

Juvenile History

The Impulsive subjects were significantly more likely to have been suspended or expelled from school, $\chi^2(2, N = 70) = 8.72, p<.05$, and more likely to have been arrested as juveniles, $\chi^2(2, N = 73) = 12.41$,

$p < .01$, than the Disinhibited or Nonimpulsive groups (see Table 14).

Marital Status

There were no differences among the groups in terms of current marital status ($\chi^2(4, N = 75) = 4.11$, $p = .39$), duration of current relationship, $F(2, 65) = .5578$, $p = .58$, number of previous relationships, $F(2, 66) = 1.28$, $p = .29$, or in spousal support of the subjects at the time of incarceration ($\chi^2(2, N = 49) = .86$, $p = .65$). Further, there were no differences in number of children, $F(2, 69) = 2.2129$, $p = .12$, contact with children at the time of incarceration ($\chi^2(2, N = 39) = .50$, $p = .78$), or marital problems at the time of incarceration ($\chi^2(2, N = 48) = 2.33$, $p = .31$). This data is summarized in Table 15.

Mental Health History

Subjects in the Disinhibited group were significantly more likely than the Nonimpulsive subjects to have had a previous, $\chi^2(2, N = 75) = 18.41$, $p < .001$, or current problem with alcohol, $\chi^2(2, N = 74) = 17.22$, $p < .001$ (See Table 16). Impulsives, however, were more likely to have had a previous problem with drug use, with this difference approaching statistical

Table 14

Juvenile HistoryWas subject ever suspended/expelled?

N	21	34	15	
Yes	17	14	7	
Percent	81.0	41.2	46.7	*

Any juvenile arrests?

N	21	37	15	
Yes	18	14	8	
Percent	85.7	37.8	53.3	**

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

Table 15

Marital Status

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
N	21	38	16
Single	9	10	4
Married/Cl	9	14	6
Separated	3	14	6

Duration of Relationship (Months)

N	20	35	13
Mean	10.95 (10.92)	8.46 (9.75)	11.23 (10.17)

Wife Supportive at Time of Admission?

N	11	27	11
Yes	8	16	6
Percent	72.7	59.3	54.5

Contact With Wife at Time of Admission?

N	11	27	11
Yes	8	19	7
Percent	72.7	70.4	63.6

Marital Problems at Time of Admission?

N	11	27	10
Yes	8	16	4
Percent	72.7	59.3	40.0

Number of Previous Marriages/Common Law Relationships

N	19	36	14
Mean	.42 (.69)	.83 (1.21)	.50 (.65)

Total Number of Children

N	20	36	16
Mean	.70 (1.13)	1.25 (1.34)	1.56 (1.26)

Contact With Children?

N	7	21	11
Yes	6	17	8
Percent	85.7	81.0	72.7

Table 16

Mental Health History

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
<u>Under Psychiatric Care At Admission?</u>			
N	21	38	16
Yes	11	9	3
Percent	52.4	23.7	18.8

History of Suicide Attempts

N	21	38	16
Yes	8	8	2
Percent	38.1	21.1	12.5

History of Head Injury or Brain Dysfunction

N	21	38	16
Yes	1	2	0
Percent	4.8	5.3	0

Previous Psychiatric History

N	21	38	16
Yes	12	12	7
Percent	57.1	31.6	43.8

Previous Diagnosis

N	18	36	14
None	8 (44.4%)	25 (69.4%)	10 (71.4%)
Pers. Dis.	8 (44.4%)	6 (16.7%)	1 (7.1%)
Other Diag.	2 (11.1%)	5 (13.9%)	3 (21.4%)

Number of Psychiatric Hospitalizations

N	20	37	16	
Mean	1.10 (2.25)	.32 (.67)	.13 (.34)	*

Table 16 (cont'd)

Mental Health History

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
<u>Previous Alcohol Problem</u>			
N	21	38	16
Yes	16 (76.2%)	35 (92.1%)	6 (37.5%) **

Current Alcohol Problem

N	21	38	15
Yes	15 (71.4%)	34 (89.5%)	5 (33.3%) **

Previous Drug Problem

N	21	38	16
Yes	18 (85.7%)	21 (55.3%)	11 (68.8%)

Current Drug Problem

N	21	38	16
Yes	15 (71.4%)	15 (39.5%)	10 (62.5%) *

Family History of Drug/Alcohol Abuse

N	20	36	15
Yes	14 (70.0%)	26 (72.2%)	8 (53.3%)

Family Psychiatric History

N	19	37	15
Yes	6 (31.6%)	4 (10.8%)	3 (20.0%)

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

significance levels, $\chi^2(2, N = 75) = 5.68, p=.06$.

Further, the Impulsive subjects were significantly more likely to have a current problem with drugs, $\chi^2(2, N = 75) = 6.24, p<.05$, and had significantly more admissions to a psychiatric facility, $F(2, 70) = 3.26, p<.05$, than either of the other groups (although the majority of these admissions were for court-ordered presentence assessments).

No significant differences were found for family history of alcohol/drug abuse, $\chi^2(2, N = 71) = 1.80, p=.41$, or family psychiatric history, $\chi^2(2, N = 71) = 3.66, p=.16$.

Criminal Behaviour

No significant differences were found among the groups for previous number of convictions, $F(2, 66) = 1.17, p=.32$, previous number of incarcerations, $F(2, 69) = 1.40, p=.25$, longest previous incarceration, $F(2, 70) = 1.66, p=.20$, or number of previous property offenses, $F(2, 66) = 1.60, p=.21$, drug/alcohol offenses, $F(2, 67) = .51, p=.60$, assault offenses, $F(2, 69) = .64, p=.53$, sex offenses, $F(2, 70) = 1.82, p=.17$, or other types of offenses, $F(2, 66) = 1.36, p=.26$ (See table 17).

Table 17

Criminal History

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
<u>Previous Convictions</u>			
N	19	35	15
Mean	14.79 (15.68)	9.37 (8.53)	12.00 (15.67)
<u>Previous Incarcerations</u>			
N	19	37	16
Mean	4.95 (5.08)	3.19 (3.06)	3.31 (3.86)
<u>Longest Previous Sentence (Months)</u>			
N	20	37	16
Mean	15.65 (16.60)	8.24 (12.80)	11.31 (16.20)
<u>Previous Property Offenses</u>			
N	19	35	16
Mean	7.63 (6.67)	4.11 (5.74)	6.07 (9.78)
<u>Previous Alcohol and/or Drug Offenses</u>			
N	19	35	16
Mean	1.21 (1.78)	1.97 (3.09)	1.69 (2.44)
<u>Previous Assault Offenses</u>			
N	20	36	16
Mean	.75 (1.41)	.67 (1.31)	.31 (.60)
<u>Previous Sex Offenses</u>			
N	20	37	16
Mean	.00 (.00)	.00 (.00)	.38 (1.50)
<u>Other Previous Offenses</u>			
N	19	35	15
Mean	5.11 (8.34)	2.49 (3.01)	3.40 (5.90)

Institutional Behaviour

No significant differences were found among the groups for previous escapes from correctional institutions, $\chi^2(2, N=74) = 2.06, p=.36$ (see Table 18). Differences approached significance, $\chi^2(2, N=74) = 4.69, p=.10$, however, for history of "Unlawfully at Large" offenses (either court convictions, or institutional adjudications), with the Impulsive group more likely to have such convictions than the other two groups (note the roughly linear relationship in Table 18). The Disinhibited group appeared to be significantly less likely to have had misconducts in previous incarcerations, $\chi^2(2, N = 73) = 8.13, p<.05$, than did the other two groups.

The Impulsive group lost Rating System points significantly more frequently than the Disinhibited group, but there were no differences between the Disinhibited and Nonimpulsive groups, $F(2, 60) = 3.14, p<.05$. No differences were found in the number of times the subjects lost Rating System levels, $F(2, 62) = .24, p=.79$. No significant differences were found among the groups in number of misconducts received

Table 18

Institutional Behaviour

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
<u>History of Escapes</u>			
N	21	37	16
Yes	0 (0%)	2 (5.4%)	0 (0%)
<u>History of U.A.L.</u>			
N	21	37	16
Yes	7 (33.3)	6 (16.2%)	1 (6.3%)
<u>History of Institutional Misconducts</u>			
N	21	36	16
Yes	13 (61.9%)	9 (25.0%)	8 (50.5%) *
<u>Number of Times Rating System Points Were Lost</u>			
N	18	33	12
Mean	1.61 (3.27)	.24 (.75)	.67 (.89) *
<u>Number of Times Rating System Levels Were Lost</u>			
N	20	33	12
Mean	.70 (.73)	.55 (.83)	.58 (.79)
<u>Number of Misconducts During Present Incarceration</u>			
N	18	33	12
Mean	.83 (1.72)	.36 (.60)	.25 (.45)
<u>Average Assessment Unit Do.m Rating</u>			
N	20	37	16
Mean	3.20 (.38)	3.41 (.31)	3.30 (.47)
<u>Mutual Aid Ratings (Treatment Unit)</u>			
N	17	32	13
Mean	3.92 (.49)	4.19 (.37)	4.04 (.56)

Table 18 (cont'd)

Institutional Behaviour

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>	
<u>Dorm Ratings (Treatment Unit)</u>				
N	17	32	13	
Mean	3.30 (.42)	3.52 (.29)	3.61 (.33)	*
<u>Work Ratings (Treatment Unit)</u>				
N	14	27	11	
Mean	3.60 (.50)	4.12 (.49)	3.74 (.83)	*
<u>Average Rating While at Rideau Treatment Centre</u>				
N	20	36	15	
Mean	3.64 (.51)	3.93 (.34)	3.79 (.56)	
<u>Average Dorm Rating While at Rideau Treatment Centre</u>				
N	20	36	15	
Mean	3.24 (.40)	3.49 (.27)	3.48 (.44)	*

* $p < .05$

during the present incarceration ($F(2, 60) = 1.55$, $p=.22$).

Average ratings were examined for each subject's behaviour in the Assessment Unit and in the Treatment Unit. No significant differences were found between the groups on average dormitory ratings while in the Assessment Unit, $F(2, 70) = 2.07$, $p=.13$, nor were Mutual Aid ratings significantly different after those subjects went to the Treatment Unit, $F(2, 59) = 2.17$, $p=.12$. The Disinhibited group however, earned significantly higher Dorm ratings, $F(2, 59) = 3.60$, $p<.05$, than the Impulsive group. Overall, the average rating received while at Rideau Treatment Centre approached significance, $F(2, 68) = 2.73$, $p=.07$, with the Impulsive group average rating being less than both other groups.

Employment

No significant differences were found among the groups in employment status (working vs. unemployed) at admission, $F(2, 70) = 1.21$, $p=.30$ (see Table 19). Impulsive subjects, however, were significantly less likely to have job skills than the other two groups, $\chi^2(2, N = 75) = 8.11$, $p<.05$, and were significantly

Table 19

Employment

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
<u>Employment Status Upon Admission</u>			
N	20	37	16
Unemployed	8 (40.0%)	13 (35.1%)	9 (56.3%)
<u>Employment Type Upon Admission</u>			
N	21	38	16
Unskilled	14 (66.7%)	13 (34.2%)	4 (25.0%) **
Skilled	7 (33.3%)	25 (65.8%)	12 (75.0%)
<u>Ever Fired</u>			
N	19	34	15
Yes	13 (68.4%)	12 (35.3%)	5 (33.3%) *
<u>Longest Period of Employment (Years)</u>			
N	19	32	14
Mean	1.79 (3.15)	3.72 (4.73)	3.71 (4.91)
<u>Financial Problems at Time of Admission</u>			
N	19	34	14
Yes	7 (36.8%)	14 (41.2%)	7 (50.0%)
<u>History of Social Assistance (Welfare, U.I.C., Disability, etc.)</u>			
N	21	38	16
Yes	9 (42.9%)	18 (47.4%)	8 (50.0%)

*p<.05

**p<.01

more likely than either the Disinhibited or the Nonimpulsive subjects to have been fired in the past ($\chi^2(2, N = 68) = 6.33, p < .05$). No significant differences were found among the groups for longest period of employment at a particular job, $F(2, 62) = 1.31, p = .28$, financial problems at the time of admission, $\chi^2(2, N = 67) = .58, p = .75$, or in dependence on social assistance at the time of the current incarceration ($\chi^2(2, N = 75) = .20, p = .90$).

Family Background

Significant differences were found for birth position, $\chi^2(6, N = 72) = 14.87, p < .05$ (see table 20). Nonimpulsive subjects were more likely to be the oldest child. No significant differences were found in number of siblings, $F(2, 69) = .18, p = .84$, nor in perceived quality of relationships with siblings, $\chi^2(2, N = 70) = 1.20, p = .55$.

No significant differences were found in the incidence of parental separation, $\chi^2(2, N = 73) = 1.21, p = .55$, nor in age of subjects when parents separated, $\chi^2(6, N = 34) = 7.70, p = .26$. No significant differences were found for proportion of subjects

Table 20

Family Background

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>
<u>Number of Siblings</u>			
N	20	37	15
Mean	3.25 (1.94)	3.00 (2.05)	3.33 (2.29)
<u>Birth Position</u>			
N	20	37	15
Only Child	0 (0%)	2 (5.4%)	1 (6.7%)
Oldest	3 (15.0%)	12 (32.4%)	9 (60.0%) *
Youngest	8 (40.0%)	16 (43.2%)	5 (33.3%)
<u>Good Sibling Relationships?</u>			
N	20	36	14
Yes	16 (80.0%)	32 (88.9%)	11 (78.6%)
<u>Were Parents Separated?</u>			
N	20	37	16
Yes	11 (55.0%)	19 (51.4%)	6 (37.5%)
<u>Subject's Age at Parental Separation</u>			
N	11	18	5
<=6	6	6	1
7-12	3	8	2
13-17	2	4	1
18-25	0	0	1
<u>Good Relationship With Parents?</u>			
N	20	36	15
Yes	15 (75.0%)	29 (80.6%)	13 (86.7%)

Table 20 (cont'd)

Family Background

	<u>IMP</u>	<u>DIS</u>	<u>NON</u>	
<u>Incidence of Parental Mortality</u>				
N	20	37	16	
Yes	4 (20.0%)	15 (40.5%)	7 (43.8%)	
<u>Age of Subject on Death of Parent</u>				
N	4	14	6	
<=6	1	0	2	
7-12	2	0	1	
13-17	0	3	1	
18-25	1	6	0	
26-35	0	4	2	
36-45	0	1	0	
<u>Children's Aid Society (CAS) Involvement</u>				
N	20	37	16	
Yes	9 (45.0%)	6 (16.2%)	1 (21.9%)	**
<u>Placement in Foster Care</u>				
N	20	37	16	
Yes	8 (40.0%)	5 (13.5%)	1 (6.3%)	*
<u>Subject's Age Upon CAS Involvement</u>				
N	9	6	1	
<=6	3	1	0	
7-12	5	4	1	
13-17	1	1	0	
<u>Subject's Age Upon Foster Placement</u>				
N	8	5	1	
<=6	2	1	0	
7-12	5	4	1	
13-17	1	0	0	

* p<.05

** p<.01

reporting good relationships with parents, $\chi^2(2, N = 71) = .74, p=.69$. No significant differences were found in the incidence of parental mortality ($\chi^2(2, N = 73) = 2.98, p=.23$).

Significant differences were found in the incidence of Children's Aid Society (CAS) involvement, $\chi^2(2, N = 73) = 9.22, p<.01$, and placement into foster homes, $\chi^2(2, N = 73) = 8.09, p<.05$. Impulsives were significantly more likely to have had CAS involvement in their lives, and more likely to have been placed into foster homes than either of the other two groups. No significant differences were found among groups in age at which CAS became involved, $\chi^2(4, N = 16) = 1.20, p=.88$, nor in the ages at which subjects were placed into foster care, $\chi^2(4, N = 14) = 1.27, p=.87$, although it is interesting to note that for all groups, both events took place when most of the residents were younger than 12, and also that there is a very low number of subjects represented in the Nonimpulsive group (see Table 21).

Table 21

Administration times for selected dependent measures (minutes)

	N	Mean (S.D.)	Range
Fx	75	5.56 (2.01)	2-12
So	73	8.79 (2.70)	4-21
LOC	77	7.14 (1.92)	4-14
HES	75	11.39 (3.39)	6-22
PSI	72	8.60 (2.47)	4-19
ACT	76	30.00 (19.66)	9-164
MEPS	72	114.64 (74.68)	48-555

Test times between groups

		IMP	DIS	NON
<u>Fx</u>	N	20	39	16
	Mean	5.25 (1.74)	5.67 (2.23)	5.69 (1.82)
<u>So</u>	N	20	37	16
	Mean	8.55 (3.47)	9.03 (2.49)	8.56 (2.16)
<u>LOC</u>	N	22	39	16
	Mean	6.45 (1.65)	7.62 (2.07)	6.94 (1.61)
<u>HES</u>	N	20	39	16
	Mean	10.65 (2.74)	11.92 (3.79)	11.00 (3.03)
<u>PSI</u>	N	20	37	15
	Mean	8.15 (1.98)	9.19 (2.83)	7.73 (1.75)

Test Utility

Administration times for seven of the dependent measures were recorded, first, in order to provide future researchers with information regarding time to complete the tests, and, second, to see if there were any differences in test completion time as a function of group membership. Test times for the MEPS, ACT, Fx, So, HES, LOC, and the PSI are presented in Table 21. There were no significant differences among the groups for any of the tests, although differences nearing significance were found for the LOC, $F(2, 74) = 2.82$, $p=.07$), and the PSI, $F(2, 69) = 2.40$, $p=.10$). In both of these cases, the Disinhibited group took longer to complete the tests: This trend was true for all tests except the for the Fx scale.

DISCUSSION

Validity of Behavioural Categorization of Impulsivity

Historical and current behavioural information were used to estimate the degree of behavioural impulsivity displayed by each subject drawn from an adult male offender population. The process of assigning subjects to each of the three groups was completed independently by the author and his cohort without knowledge of or reference to the subjects' performance on any of the psychometric instruments. Only after the two investigators had completed, compared, and agreed to group assignments were test results examined.

The MMPI Impulsivity Index (Scales [4 + 6 + 8 + 9]/4), successfully discriminated the Impulsive group from the other two groups. The MMPI, as was stated earlier, has been established as a standard and valid measure of impulse control in clinical settings (see Graham, 1977). Thus, given that convergent validity was obtained for the Impulsivity Index and the behavioural categorization procedure, the validity of the latter is supported.

Demographic Characteristics of the Impulsive Group

The present study yielded a number of significant differences between the Impulsive, Disinhibited, and Nonimpulsive groups. Impulsive subjects were more likely to have had CAS involvement in the home, and more likely to have been placed into foster care. As juveniles, they were more likely to have been arrested and suspended or expelled from school, and as adults, were more likely to have criminal associates in the community. Vocationally, the Impulsive subjects were less likely to have marketable job skills, and more likely to have been fired in the past. Further, they were significantly more likely to have experienced a psychiatric hospitalization, and more likely to have attempted suicide. At RTC, Impulsives lost rating system points more frequently, although they did not lose rating system levels any more frequently than the other two groups, suggestive of erratic or marginal rather than consistently poor institutional performance.

The data presented to this point suggest rather convincingly that members of the Impulsive group came from a home in which their caregivers were overwhelmed

by environmental influences, or who practised inappropriate (or perhaps inconsistent) parenting techniques, or both. Previous research (e.g., Patterson et al., 1989, 1991; Robins, 1978; Sarason, 1978) has shown that children raised in such circumstances are at a greater risk in terms of the socialization process (i.e., the acquisition and internalization of social values and skills). More significantly, the Impulsives appear to have had less opportunity to learn and rehearse appropriate interpersonal "attention-seeking" behaviours. The data suggest that the bulk of the children in this sample were less than 12 when they became involved with CAS. Considering the ages of the subjects and the increased likelihood of poor modelling from the caregivers, inconsistent or inappropriate behavioural contingencies, and perhaps decreased coping capacity of the caregiver due to increased environmental stressors, it would not be difficult to see how the development of social reasoning and interpersonal problem-solving may be handicapped.

Psychometric Characteristics of the Impulsive Group

Psychometrically, a number of highly significant and relevant differences were found. Although there were no significant differences in FSIQ, Impulsives obtained significantly lower scores on the Comprehension subtest, a test which taps practical judgement (common sense) and social reasoning. Further, Impulsives obtained significantly lower scores on the Re and So scales, implying rather strongly that they had a poorer conception and understanding of social values, and were less likely to have internalized and made these values operational. Moreover, there exists a deficit in the ability of the Impulsive to conceptualize the discrete steps necessary to successfully resolve interpersonal, problematic situations in which social approval must be elicited (see MEPS).

Members of the Nonimpulsive group obtained significantly higher scores on the Re scale than the Disinhibited and Impulsive groups, suggesting that they have conceptualized and understood social values to a higher degree. Further, they had significantly higher scores on the So scale than the Impulsive group,

suggesting that, in addition to understanding these values, they also were able to internalize and make them operational. Their performance on the MEPS shows greater overall mastery of interpersonal problem-solving skills across all problematic situations presented. Nonimpulsive subjects also tended to be the oldest child in their families.

The correlational data provides some further information (see Tables 9 and 11). The more impulsive the individual (as measured by the MMPI Impulsivity Index), the more likely he was to expect chance to control events. The less impulsive individual is more likely to attribute events to an internal locus of control, and possesses greater empathic skills (as measured by the HES).

The Disinhibited group were more likely to have a prior and current alcohol problem, attesting to the role of alcohol as a primary disinhibitor in the current sample. Members of this group obtained higher error scores on the MFFT, indicative perhaps of distractibility due to emotional stressors more common in this group, or to visuospatial deficits resulting from alcohol abuse.

In addition to the deficits in socialization and problem-solving, Impulsives obtained higher scores on an MMPI impulsivity index (scales 4 + 6 + 8 + 9), with scales 6 and 9 significantly higher than the other groups and the differences for scale 4 nearing significance. These findings are supportive of Graham's (1987) assertion that elevations on these scales are indicative of a lack of impulse control. Further, it is important to note that a diagnosis of antisocial personality disorder (a category derived in part from conceptualizations of psychopathy) is frequently associated with elevations on scales 4 and 9 (i.e., a two-point code type of 49 or 94) on an individual's clinical profile, as is generally true for the Impulsive group; the four-point code characterizing the Impulsive group is 4968, while the code for the other two groups is 4927.

Of particular interest was the absence of any group differences on problem-solving confidence as measured by the PSI. This is clinically relevant in that while Impulsives were significantly less skilled in actual problem-solving ability, there were no significant differences in the confidence subjects had

in their abilities. One obvious implication of these findings is that impulsive subjects tend to overrate their interpersonal competence. Similarly, Avery-Clark, Clark, and Blake (1983; cited in Grier, 1988) found no significant differences on problem-solving confidence using the PSI between a group of sex offenders and nonsexual offender controls. Yet, Grier (1988) found that there was a significant difference between MEPS scores on one particular item in which antisocial rapists and a non-offender control group were to conceptualize means to effect a heterosexual reconciliation (scenario 2).

The Construct of Impulsivity

An impulse is generally defined as an "incitement to action without reflection or deliberation" (Wolman, 1973). To suggest that an individual is "impulsive" is to suggest that to some (generally unspecified) degree his or her behaviour is characterized by insufficient deliberation, further implying that the referent behaviour has been deficient in efficiency or inappropriate in some way.

A good deal of research on impulsivity has concentrated on the time period between the

presentation of a stimulus and the initiation of a behaviour (e.g., as seen in MFFT research). It is assumed that during this latency period deliberation occurs. Logically, the longer the latency period the greater amount of deliberation, and the greater the probability of an effective resultant behaviour. Conversely, the shorter the latency period, the less deliberation occurs and less effective behaviour results. However, at least two variables make this latency period a less than perfect predictor of impulsive or non-impulsive behaviour. First, it is obvious that the quality of deliberation varies widely across individuals. Second, prior exposure to similar stimuli in the past (whether through chance encounters or contrived training) is likely to both decrease the latency period and increase the efficacy of the behaviour. Thus, each of these factors is to a large extent a function of the individual's prior history of reinforcement. Indeed, simply because there may be a latency period, doesn't mean that deliberation is necessarily taking place. It may even be argued that some well-trained and well-practised behaviours may require little or no deliberation.

Moreover, behaviours that are preceded by a short latency period and are effective in the environmental context are generally not seen as impulsive in nature. Behaviours that are preceded by a short latency period and are ineffective but not maladaptive are not generally seen as clinically significant. However, behaviours which are preceded by a short latency period and which are counterproductive or maladaptive are seen as impulsive acts. This is not to say that the degree of deliberation prior to behaviour is unimportant--in this paper, a great deal of the problem-solving process has been presumed to have already taken place prior to behaviour in situations for which no prior training has occurred. Rather, it is to say that the accuracy or appropriateness of behaviour (the effectiveness with which the behaviour achieves the goal) is ultimately the criterion variable, and also the most reliable testament to the quality of prior deliberation or training.

Both the quality of deliberation and the effectiveness of an individual or class of behaviour can be seen to be direct results of prior learning history. The frequency of inaccurate behaviours and

their generalization across settings would appear to imply the degree to which these behaviours have been reinforced or punished and therefore may serve as current indicators of a given individual's reinforcement history.

It is not surprising, then, to find that individuals who have been unable to observe, understand, and rehearse prosocial interpersonal skills at different points in their developmental history will demonstrate a deficient quality of interpersonal behaviours in varying respects. Indeed, where novel situations arise, it can likely be expected that the quality of an individual's deliberation will be handicapped for the same reasons: lack of experience and a history of inconsistent or maladaptive behavioural contingencies that have created, modified, and maintained those skills present in his current behavioural repertoire.

As has already been seen, members of the Impulsive group are significantly more likely to have experienced CAS involvement in their childhood homes, and are more likely to have been placed in foster care. While the reasons for these interventions were not available, it

would be reasonably safe to assume that the primary reasons had to do with extraordinary personal or environmental stressors on the family, inappropriate parenting behaviour, or behaviour problems presented by the subject himself as a child, or a combination of these factors. Two points beg discussion at this point. First, there is evidence to suggest that the developmental history of Impulsives were marked by inconsistent or inappropriate parenting techniques, or by the temporary inability of a parent to cope with environmental stressors. Secondly, it is clear that these factors brought at least some of these children into the care of the state through varying degrees of CAS involvement, foster homes, and facilities for juvenile offenders. The implications are that the agencies mentioned above are well suited as sites for the identification of impulsive youths, as well as for interventions aimed at enhancing interpersonal effectiveness. Further, it also suggests that any interventions provided by those agencies in that relevant time period were less effective than they should be in enhancing interpersonal effectiveness and self-control. For these reasons, it is suggested that

some future research efforts be directed towards means for the identification of impulsive children and adolescents, and to the development and evaluation of more effective interventions to meet those needs.

It is conceivable that, as one ages, one is able to observe a great many more models, is subject to more predictable behavioural contingencies, and has had more opportunity to rehearse learned behaviours. This may in part explain why individuals meeting the criteria for antisocial personality disorder often demonstrate a diminution of sexual promiscuity, fighting, criminality, and vagrancy around the age of 30 (APA, 1980). Whether this is due to the evolution of more appropriate behaviours or to better criminal planning, the degree of impulsivity appears to diminish with age, consistent with findings in the present study.

The present study tends to confirm Saunders et al.'s (1973) observation that the concept of impulsivity as an unitary character trait is not supported by empirical evidence. Further, if one assumes that the observed problem-solving deficit can be ameliorated (see Tisdelle & St. Lawrence, 1986 for a review of some successful interventions) and certain

components of the socialization process learned or enhanced, there is every reason to expect that treatment gains can be made with those who exhibit impulsive behaviours.

While age was clearly associated with impulsivity in the present study, this may be due in large part to sampling. Subjects were selected from a provincial correctional facility, serving offenders with sentences of up to two years. It may well be that by the time Impulsives reach the age of subjects in the other two groups, they may be more likely to have "graduated" to the federal correctional system as a result of more severe sentences resulting from more violent offences or persistent criminality. For this reason, it is entirely possible that impulsive behaviours do not decline in frequency with age at the rate implied by the results of this study.

Impulsivity and the Problem-solving Process

The present study assumed that there are at least seven important components of effective problem-solving: (1) the ability to recognize a problematic situation; (2) the ability to delay responding; (3) the ability to conceptualize a desired outcome; (4) the

ability to generate potential alternative solutions; (5) the ability to critically evaluate and select an appropriate option; (6) the ability to effectively execute the selected course of action; and (7) the ability to consistently evaluate behavioural outcome.

The ability to delay responding was measured to some degree by latency scores on the MFFT. While there were no significant differences on this measure, it is important to note here that the MFFT is not an interpersonal task, but rather an impersonal one and previous research has shown this to be unrelated to social adjustment (Ross & Fabiano, 1985). One might have expected to see differences among the groups in latency to complete tests of an interpersonal nature. However, again, no significant differences were found.

No significant differences were found among the groups in their number of alternative solutions to problematic interpersonal situations (OTT), or in their ability to perceive possible consequences (ACT). In fact, overall, there were no significant differences among the groups in their ability to solve interpersonal problems (MEPS), except for those problems that involved the elicitation of social

approval. Moreover, no significant differences were found in other cognitive qualities that are potentially involved in the process: empathy, cognitive inflexibility, problem-solving confidence, or locus of control.

Of course, there are components of the problem-solving process which were not directly addressed in the present study. It is quite possible that Impulsives have difficulty recognizing problematic situations, delaying responding, consistently evaluating the behavioural outcomes of selected courses of action, and in actually executing behaviours aimed at eliciting social approval, given that they appear not to be able to conceptualize as many means to successfully resolve such problematic situations.

Classification for Effective Rehabilitation

Andrews, Bonta, and Hoge (1990) have assembled a set of guidelines for optimizing the effects of correctional treatment for reductions in recidivism rates in the form of four principles of classification:

1. Higher levels of service are reserved for higher risk cases. In brief, intensive service is reserved for higher risk cases because they

respond better to intensive service than to less intensive service, while lower risk cases do as well or better with minimal as opposed to more intensive service.

2. Need: Targets of service are matched with the criminogenic needs of offenders. Such needs are case characteristics that, when influenced, are associated with changes in the chance of recidivism. If reduction in the chances of recidivism is an ultimate goal, the more effective services are those that set reduced criminogenic need as intermediate target of service.

3. Responsivity: Styles and modes of service are matched to the learning styles and abilities of offenders. A professional offers a type of service that is matched not only to criminogenic need but to those attributes and circumstances of cases that render cases likely to profit from that particular type of service.

4. Professional override: Having considered risk, need, and responsivity, decisions are made

as appropriate under present conditions.

(Andrews, Bonta, & Hoge, 1990, p.20)

The present study suggests that Impulsives are at a greater risk for recidivism (see LSI data) than the other two groups and may therefore require more intensive services. Conversely, non-impulsive subjects appear to be less at risk for recidivism and, hence, may require less intensive services.

A crucial element in the effective reduction of recidivism is the ability with which we can assess the risk and need factors for individual offenders. Psychometric instruments that are specifically designed for these tasks are readily available for use and can be used in a time and cost efficient manner. If impulsivity is to be a treatment focus, the present study has identified some useful, and some not so useful, instruments for such purposes.

The issue of psychopathy being a potential covariate in the present study is difficult. Clearly, there is a general consensus that psychopaths (or antisocial personality disorders) are characterized by impulsivity. It would be illogical to assume that all people who exhibit impulsive behaviour are

psychopathic, yet many of the significant differences found between the Impulsive group and the other two groups were consistent with characteristics of psychopathy. Indeed, the average MMPI 2-point code for the total sample (49) is what one might expect for antisocial personality disorder. As noted above, the two-point code for the Impulsive group was also 49, but both scales were more elevated than in the other two groups, and the 4-point code for Impulsives (4968) was distinguished by the absence of scale elevations associated with restraint or inhibition of impulses evident in the 4-point codes for the other two groups (4927). Perhaps the view that psychopathy is a continuum rather than a discrete typology (e.g., Hare, 1970; Hare & Cox, 1978; Quay, 1965) is a more accurate one and it may be that, for whatever reason, impulsives tend to be clustered more toward the psychopathic end of this continuum. Whether or not the subjects in the Impulsive group are in fact more psychopathic, the implications for classification are the same, for both Impulsives and psychopaths display comparable needs and comparable risks are implied. As stated by Andrews, Bonta, and Hoge (1990):

Our working hypothesis is that the effectiveness of the treatment of "psychopaths" is a combined function of their high risk levels (intensive controls and service are indicated), multiple criminogenic needs (impulsivity, procriminal sentiments, and isolation from anti-criminal others should be targeted), and scores on responsivity factors (low empathy, low anxiety) that indicate high levels of structure. (p. 42)

Test Instrument Critique

Fourteen psychometric instruments were used in the present study, including several associated subscales, research scales, and indices. During the selection of these instruments, every effort was made to use instruments that were cost- and time-efficient and were valid measures of what it was they purported to measure, yet could also reflect potential treatment gains. That is to say, tests heavily laden with items of an historical nature (and consequently less likely to reflect change) were not selected when other valid instruments were available. With respect for the financial and time constraints with which all correctional researchers must cope, group test

instruments were favoured over one-to-one tests, although it should be noted that all of the test instruments employed can be administered individually if client needs so dictate. Further, several of these instruments have in previous research, demonstrated utility in the process of assessing an individual's risk for recidivism (e.g., LSI), and in the assessment of treatment needs and amenability (e.g., MMPI).

The MAB and the TABE proved to be quite suitable in the subject screening process. They were used to select volunteers who had sufficient basic literacy skills and intellectual capacity to complete the experimental test battery. While it was standard in the present study to select subjects whose FSIQ was at least 80, and whose reading comprehension and language expression skills were at the grade six level or above, all of the tests employed can be administered to individuals at lower levels through the use of one-to-one interviews or audio recordings. It should be noted, however, that due to the relatively stringent subject selection criteria, the present results may not be generalizable to subjects with IQ or literacy levels below that of the current sample.

The So, LOC, PSI, HES, and Fx scales were extremely easy to administer and score (see Table 21 for test times required for administration). However, of these, only the So scale discriminated among the three groups.

The MFFT proved to be very simple to administer and score, yet failed to discriminate between Impulsive and Nonimpulsive subjects. The Disinhibited group made significantly more errors than the other groups, suggesting that the MFFT was not measuring impulsivity but rather may have been tapping something else (e.g., distractibility due to an emotional state such as depression). Thus, the MFFT failed to do its task and, in the context of the present study, its validity is questionable.

Normative data on adult male offenders was collected by Heckel et al. (1989) and presented using a median split of the latency scores. Those considered to be Impulsives and Reflectives in this normative study had mean latency scores of 220.06 and 687.69 seconds respectively. The latency data for the total sample in the present study is comparable to Heckel et al., although the present Impulsive groups had higher

mean latencies than Heckel et al.'s Impulsives and the present Nonimpulsive group had a lower mean latency than did Heckel et al.'s Reflectives. Further, Heckel's Impulsives and Reflectives obtained mean correct scores of 2.97 and 5.52 respectively (i.e., mean error scores of 9.03 and 6.48 respectively). These scores were not characteristic of any group in the present study. Given that the present subjects were categorized on the basis of behavioural impulsivity, the discrepancy between Heckel et al. and the present results suggests that the MFFT is measuring something other than behavioural impulsivity.

Salkind (undated) compiled MFFT norms for children between the ages of 5 and twelve. A rather striking trend emerged in which both boys and girls at the ages of 9 and ten made fewer errors, and their latency scores increased. After age 10, however, latency times became shorter, and error scores remained lower. This suggests that there is a developmental trend in which children become more proficient in the MFFT task after age ten, and that differences after that age become more difficult to discern. This may help to explain why apparently contradictory data is obtained in the

study of cognitive tempo in adolescents and adults (e.g., Glenwick, Croft, Baroca, & Black, 1979; Saunders, Repucci, & Sarata, 1973). Further, in the MFFT research literature, there has been a lengthy history of disagreement over the appropriate scoring methods, the relative importance of latency scores, and even suggestions that the reflection-impulsivity concept itself needs reinterpretation (Pedro Solis-Camara, & Pedro Solis-Camara, 1987).

The MEPS proved to be a useful test, but there are several serious drawbacks. Instructions for scoring have been needlessly difficult, although this has been ameliorated to some extent by new scoring guidelines (Spivack, Shure, & Platt, 1985). While the test measures the quantitative number of means (discrete steps towards the successful resolution of a problematic situation) generated for a problematic situation, it says absolutely nothing about the quality of those means. On some occasions, subjects provided stories in which inappropriate behaviours were described, and characters other than the protagonist took the steps necessary to resolve a problematic situation. One subject from the Impulsive group wrote

the following story in response to scenario number two, in which H.'s girlfriend leaves him. The story ends with everything fine between he and his girlfriend:

H. threw a beer bottle at Betty and she ran out of the apartment in a furious yet fearful rage. H. started cursing, "F---ing sleaze bag, God damn f---ing whore of a bitch pig". After he cooled off he went right to bed. At 3:00 a.m. the phone rang and on the other end was Betty. She started crying and saying she was sorry and it was her fault so H. told her to come over and get laid. They lived happily ever after.

In the example above, the qualitative aspects of the test-taker's response might yield more useful information about the test-taker's interpersonal problem-solving skills than would a simple total number of means. In this example, the subject received a less than average score, yet it would have been possible for him to have obtained a higher score and not altered the general storyline. Fortunately, examples like that were uncommon. Frequently however, stories were written that reflected a knowledge of behaviours that would be considered appropriate (and adaptive) in some

subcultures, but not appropriate by broader societal standards. Another impulsive subject wrote a story in response to scenario number eight, in which John's friends were avoiding him. The story ends when John's friends like him again:

John couldn't figure out why his friends no longer liked him. He listened to the word on the street and found out that there was a rumour going around that he was a rat. John found out who it was that started the rumour and lo and behold it was John's ex-partner who ratted on him on a score they did earlier that week. John beat the s--t out of him and word got around that John was solid and everyone liked him again.

In this particular example, the story received an average score.

While it is possible for subjects to conceptualize means that produce satisfactory results in the context of their stories, the scoring methods do not take into account (a) whether the protagonist is aware of the steps that he can implement, (b) whether these tactics are likely to be socially appropriate in the broader social context, or (c) whether those means have a

reasonable chance of being effective in the situation presented. An accounting of these qualitative differences would likely yield more useful information regarding the subject's interpersonal effectiveness.

Overall, the number of means provided by the subjects in the present study was much greater than those presented in the normative data provided by Platt and Spivack (1985), in spite of the fact that many of proposed means might be considered inappropriate. The occurrence of higher numbers of means was also observed by Tweedale, Baxter, and Gendreau (1992).

The ACT was fairly straightforward in terms of administration. Scoring was relatively simple except for the lack of a precise definition of an "internal" vs "external" consequence.

The OTT was also relatively simple to administer and score. Again however, there was no mechanism for accounting for the qualitative differences among the options offered. In story one (where two people want to watch different programs on the same TV set at the same time), there is a clear qualitative difference between the options: (a) kick your friend out of the house, and (b) use the VCR to tape one show, and watch

the other. Yet, each option is quantitatively equal. A new test or scoring system is advised in order to account for these differences.

While the MEPS, ACT, and OTT have some serious shortcomings, they are certainly the most widely used measures available at this time to measure those key aspects of the problem-solving process in adults.

Implications for Treatment and Future Research

In order for an individual to interact with his environment such that he maximizes the probability of reinforcing consequences, he must possess certain prerequisite skills. First, there must be an understanding of the rules that govern impersonal and interpersonal interactions. Second, there has to be an awareness of the behavioural strategies necessary to bring about the desired outcome. Third, the individual must have in his behavioural repertoire the ability to effectively execute those strategies. The present study suggests that the socialization process of the impulsive individual has been deficient, and this has (at least in part) resulted in several attitudinal, emotional, and behavioural handicaps. In particular, it has demonstrated that the Impulsive is deficient in

his ability to elicit social approval. Logically, it follows that an Impulsive is impaired in his ability to actually perform effective strategies where social approval is a goal.

For the reasons already noted, it is suggested that subsequent studies consider the following to be behavioural objectives in treatment programs for impulsive offenders:

1. To sensitize the subject to the fact that his/her problem-solving confidence is not in keeping with his problem-solving ability, and that this can be an obstacle to learning effective interpersonal skills (if individual testing indicates that this is the case).
2. To improve the subject's ability to recognize a problematic interpersonal situation.
3. To improve the subject's ability to delay responding in the face of a problematic interpersonal situation.
4. To improve the subject's ability to conceptualize a desired outcome.
5. (a) To increase the number of effective, prosocial responses to problematic interpersonal

situations, particularly those designed to elicit social approval; (b) To increase the efficacy with which the subject can execute effective strategies to problematic interpersonal situations, particularly those designed to elicit social approval.

6. To increase the probability that the subject will critically evaluate the outcome of the executed strategy.

It is suggested that if a treatment program is to be designed to address the treatment goals outlined above, the ultimate objective will be to enable the impulsive subject to critically analyze the effectiveness of his own behaviours, and be aware of the processes which serve to create, modify, and maintain those behaviours. The probability of this occurring is likely to be greatly enhanced if the subject is given an understanding of basic behavioural principles which govern those processes. This alone, however, is insufficient. In order for the subject to observe, rehearse, and critically analyze effective interpersonal problem-solving behaviours (as well as increase the likelihood that his new strategies will

generalize to other settings), it is suggested that intensive role-playing sessions would be quite instrumental in the acquisition of those skills outlined above.

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APPENDIX "A"
SUBJECT CONSENT FORM

RIDEAU ASSESSMENT AND TREATMENT CENTRE
SUBJECT CONSENT FORM

I hereby agree to participate in a study being conducted by Mr. Ian McKenzie at the Rideau Assessment and Treatment Centre. The study will involve completing several questionnaires and tests concerned with how different ways of thinking are related to different forms of behaviour. I also give my permission to access other files relating to me for the purposes of this study.

I understand that my identity and answers will be kept strictly confidential. I will in no way be individually identified for any purpose, whether it be concerning my participation or test scores.

It is understood that my participation is strictly voluntary, and that no payment can be offered for my assistance.

Volunteers who have taken part in this study may receive the final results when they are available (expected completion date is June, 1990). To receive this information, either contact Mr. Ian McKenzie at this institution after the expected completion date, or fill in a forwarding address on the reverse side of this form.

NAME (Please Print): _____

SIGNATURE: _____

WITNESS: _____

DATE: _____

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