

IMPULSIVE CRIMINAL BEHAVIOUR IN ADOLESCENTS :
DIFFERENT PATHWAYS, AND RELATIONSHIPS
WITH PERSONALITY DISORDERS

By

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Abstract

The purpose of this study was to describe different types of impulsive behaviour expressed in the course of adolescents' criminal acts, and explore their relationships with different types of violence and relevant personality disorders (psychopathy and borderline personality disorder). The model of disinhibition developed by J.P. Newman and J.F. Wallace (1992, 1993), on the basis of laboratory-based results, was adapted to the context of criminal behaviour. Participants were 29 adjudicated young male offenders who consented to take part in two interviews, complete a questionnaire (the Barratt Impulsiveness Scale – Version 11; Patton, Stanford, & Barratt, 1995) and give access to their files. File and interview information were used to assess psychopathy (via the Psychopathy Checklist – Youth Version; Forth, Kosson, & Hare, 1994) and borderline personality disorder (via the criteria from the Revised Diagnostic Interview for Borderlines; Gunderson & Zanarini, 1983). A manual for coding crime impulsivity was developed and used in this study. Consistent with hypotheses, impulsive behaviour driven by strong emotions was associated with both psychopathy and borderline personality disorder, and was involved in hostile/reactive violence. Contrary to hypotheses, impulsive behaviour characterised by a failure to shift attention was unrelated to psychopathy.

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Introduction

There is a strong assumption that impulsivity plays an important role in adolescent criminality. This assumption is exemplified by the prominent place given to impulsivity in theories about serious juvenile crime (e.g., Fowles, 1980; Moffitt, 1993; Quay, 1993) and the widespread inclusion of impulsivity as an intrapersonal factor in studies of risk for juvenile delinquency (e.g., Farrington, 1999; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). Although research on the topic generally supports an association between impulsivity and juvenile offending (Colder & Stice, 1998; Farrington, 1999; Loeber et al., 1998; Lynam et al., 2000; Olson, Schilling, & Bates, 1999), the approaches and methodologies used to date provide only a superficial understanding of this relationship.

While impulsivity is now seen as a multidimensional construct (Olson et al., 1999), the bulk of the research conducted on impulsivity and crime is limited to a few aspects of impulsivity and their association with the commission of criminal acts. As will be evident in the following review, little is known about how impulsivity may manifest itself in the criminal acts themselves, or about the different possible mechanisms involved in impulsive criminal behaviour. These are major gaps in our understanding of adolescent crime which hold back the development of potentially more effective assessment and intervention strategies with young offenders.

The current study was an attempt to better understand impulsivity as it is expressed in the course of crimes committed by adolescent male offenders. The main objectives of this study were to measure impulsive behaviour in the course of crime, to distinguish

among potentially different mechanisms involved in both violent and non-violent impulsive criminal behaviour, and to explore how these different mechanisms may be associated with certain personality disorder traits in adolescents.

Definitional and Measurement Issues in the Study of Impulsivity and Crime

A number of authors have described the heterogeneity that characterises the literature on impulsivity (e.g., Carrillo-de-la-Peña, Otero, & Romero, 1993; Milich & Kramer, 1984). Different researchers have construed and discussed impulsivity in many different ways, and this has led to the creation of a variety of different definitions and instruments to measure the construct (Parker & Bagby, 1997). Hart and Dempster (1997) offer a general classification scheme that is particularly useful to organise the literature on impulsivity as it relates to the forensic context, and to identify gaps in this area of research. They observe that the term impulsivity has been used to describe three different concepts: impulsivity as a personality trait, impulsivity as a symptom of certain mental disorders and impulsivity as a characteristic of certain acts of aggression.

Impulsivity as a Trait

What Hart and Dempster (1997) label impulsivity as a personality trait encompasses what others have called the personality, behavioural and cognitive approaches to the study of impulsivity (e.g., White et al., 1994). This grouping together reflects the fact that all these methods are used to describe individual differences in an enduring characteristic. This “trait” approach is the one that has dominated the study of

impulsivity, at the expense of an exploration of impulsivity as a transient state (Plutchik & Van Praag, 1995; Wingrove & Bond, 1997).

Impulsivity as a trait refers to an enduring tendency to act without thinking, to be impatient and distractible, to give in to impulses, and to favour immediate as opposed to delayed gratification (e.g., Schachar, Tannock, & Logan, 1993; White et al., 1994).

Investigators of trait impulsivity have used a variety of instruments including self-report and teacher- or parent-rated scales, neuropsychological tests and other cognitive tasks to measure the construct.

Personality scales used to measure impulsivity typically assess the presence of several behaviours and attitudes associated with lack of behavioural and cognitive control, and failure to plan ahead (e.g., Barratt, 1985, Eysenck, Easting, & Pearson, 1984). In contrast, neuropsychological and cognitive assessment tools usually focus on much narrower functions associated with—and sometimes equated to—impulsivity. They include measures of cognitive tempo (i.e., time interval estimation and production), motor inhibition (e.g., walk-a-line-slowly) and delay-of-gratification, and measures of cognitive deficits typically associated with executive functions (e.g., switching between response sets) (White et al., 1994).

Correlational analyses have shown relatively low associations among the different instruments used to measure impulsivity in adolescents (e.g., Carrillo-de-la-Peña et al., 1993; White et al., 1994). White and her associates (1994) administered 11 common impulsivity measures to a large sample of young adolescents, and obtained correlation coefficients among these instruments ranging from $-.08$ to $.33$, with all but one of them below $.30$. Factor analysis of the 11 measures suggested the existence of two factors which

the authors labelled “behavioural” and “cognitive” impulsivity. The behavioural impulsivity factor consisted of self-reports and others’ ratings of personality characteristics such as impulsivity, restlessness, impatience and undercontrol. The cognitive impulsivity factor was mainly composed of performance tasks and computer games that measured time perception, motor inhibition, delay of gratification and the ability to switch attention. As illustrated in these results, it is difficult at this point to determine whether there really exists such a two-dimensional structure of trait impulsivity or whether these statistical results simply reflect a dissociation between the different methods of assessment used (i.e., self-report and other-rated behavioural scales vs. cognitive tasks) (White et al., 1994; Zaparniuk & Taylor, 1997).

In fact, several years of research have shown a lack of agreement between self-report measures and cognitive tasks designed to assess impulsivity, not only among adolescents, but also among children and adults (Bentler & McClain, 1976; Gerbing, Ahadi, & Patton, 1987; Wingrove & Bond, 1997). Certainly, it is essential to acknowledge the wide variability in what is meant and measured within the realm of impulsivity (Olson et al., 1999), and to interpret research on impulsivity and crime accordingly.

Trait impulsivity and its relationship to juvenile crime.

Research indicates that trait impulsivity is related with delinquency in a complex manner, with different measures of impulsivity revealing different aspects of this relationship. White et al. (1994) investigated the relationship between the 11 measures of impulsivity previously referred to and 12- and 13-year-old males’ self-report of delinquency. These adolescents were part of the Pittsburgh Youth Study, a longitudinal

study on the causes and correlates of delinquency in boys. The authors used aggregated indices of behavioural and cognitive impulsivity composed of the measures loading on each of the two factors described above, and found that both indices were significantly correlated with self-reported acts of delinquency in early adolescence. However, the strength of the correlation with the behavioural factor ($r = .44$) was more than twice that of the correlation with the cognitive factor ($r = .16$) (White et al., 1994).

As described in the previous section, the behavioural impulsivity factor was composed of inventories and behaviour scales rated by teachers, parents and independent observers, while the cognitive impulsivity factor was composed of laboratory tasks assessing more specific cognitive abilities. Since, as discussed previously, the method of assessment was confounded with the types of behaviours and deficits assessed as part of the two impulsivity factors (White et al., 1994; Zaparniuk & Taylor, 1997), it seems more appropriate to interpret these results in light of what the instruments were measuring rather than as a function of hypothesised dimensions of impulsivity *per se*.

From these results, it appears that, compared with cognitive indices of deficits in impulse control, the behavioural expression of impulsivity that is available to parents', teachers' and the adolescents' own assessments may have more in common with the lack of impulse control associated with the commission of antisocial acts. White and her colleagues (1994), however, observe that the use of a similar method (i.e., self- and other-report inventories) to assess both behavioural impulsivity and delinquency may have artificially inflated the strength of the relationship between the two variables in their study. Unfortunately, the instruments and studies available to date do not allow to tease apart the effects of method of assessment and dimensions of impulsivity on delinquency.

When other factors are examined, the data reveal that cognitive impulsivity may also play a unique role in adolescents' commission of delinquent acts. Two groups of delinquent adolescents were formed in White et al.'s (1994) study, based on whether they had shown high levels of delinquency at both age 10 and ages 12-13 (stable serious delinquents) or had only shown high levels of delinquency at one of the two age periods (other delinquents). These two groups were also compared with adolescents who were non-delinquent or only mildly delinquent at both assessment times (stable non-delinquents). The investigators found that, although the behavioural composite measure of impulsivity significantly differentiated between all three groups of adolescents, the cognitive composite measure only differentiated between stable serious delinquents and the other two groups, and not between stable non-delinquents and other (non-stable) delinquents. This could suggest that cognitive deficits associated with poor impulse control may be specifically indicative of more persistent criminality.

Results from the Cambridge Study in Delinquent Development, although not directly relevant to the comparison between different measures or dimensions of impulsivity, provide some support for the hypothesis that cognitive measures of impulsivity are more useful for predicting severe delinquency than less severe delinquency. Farrington (1999) reports that male adolescents who showed higher levels of impulsivity on psychomotor tests were more likely to be convicted of a criminal offence as juveniles (i.e., between ages 10 and 18) than their less impulsive counterparts. When adjudicated adolescents were divided according to the number of offences for which they had been found guilty, it was observed that the impulsivity measures could discriminate between offenders with higher conviction rates (more than 2 convictions, $n = 45$) and those with

lower conviction rates (1 or 2 convictions, $n = 66$), but not between this latter group and the non-offender group ($n = 300$).

Based on these and other results, Farrington (1999) suggests that some factors may be responsible for the onset of criminal behaviour, while others (including psychomotor impulsivity) may be responsible for maintaining this behaviour, after its onset. While Farrington's (1999) investigation did not include measures of behavioural impulsivity, the results obtained by White and colleagues (1994) could suggest that behavioural impulsivity is involved in the onset of antisocial behaviour, while cognitive impulsivity may be more important for the persistence of this behaviour.

An alternative to Farrington's (1999) suggestion is that impulsive responding on cognitive tasks may be indicative of a more serious predisposition to commit acts of delinquency. A serious vulnerability to delinquency would also lead to the commission of a higher number of offences. Results obtained by Lynam and colleagues (2000), based on the Pittsburgh Youth Study data, are consistent with the view of cognitive deficits as indicative of such a propensity which, in interaction with the necessary environmental factors, would lead to criminality.

In this study, the authors found that impulsivity interacted with poor neighbourhood context (defined by low SES and other factors such as proportion of single-parent families) in predicting delinquency. That is, poorer neighbourhoods were associated with more severe delinquency, but only among more impulsive adolescents. In addition, higher levels of impulsivity predicted more severe delinquency, but only in adolescents living in poorer neighbourhoods (Lynam et al., 2000). Interestingly, this interaction effect was more widespread with the cognitive impulsivity factor than with the behavioural impulsivity

factor (which were based on the same aggregated measures as in White et al., 1994).

Although behavioural impulsivity was an important mediator of the effect of poor neighbourhood on the commission of violent offences, cognitive impulsivity also mediated the effect of poor neighbourhood on the commission of thefts and total offences (which included theft, violent, vice and drug, and status offences) (Lynam et al., 2000).

The Lynam et al. (2000) results point to yet another area of complexity in the relationship between impulsivity and crime: The dimensions or measures of impulsivity may be differentially associated with various types of criminal acts. Indeed, the strength of the relationships between trait impulsivity and different types of crimes varies. Luengo, Carrillo-de-la-Peña, Otero and Romero (1994), in their study of males aged 12 to 18, found that self-reported impulsivity was more highly correlated with some subscales (e.g., rule breaking and aggression) of their self-report delinquency measure than others (e.g., theft and drug abuse).

In summary, different instruments used to assess impulsivity as an enduring individual trait seem to reveal different aspects of the relationship between impulsivity and crime. Results on self-report, parent- and teacher-rated inventories, as well as observer-rated scales of global behavioural impulsivity are strongly associated with adolescents' criminality. Results on cognitive measures of more specific deficits associated with impulsivity are related to the more stable and serious tendency to commit crime and are important mediators in the relationship between poor neighbourhood context and involvement in several different types of criminal acts. Finally, it is possible that different types of crimes are more strongly associated with adolescents' impulsivity than others.

As demonstrated by this short review, the complexity of the relationship between trait impulsivity and crime requires that different methods of assessment be used and different approaches be taken to investigate this relationship.

Impulsivity as a Symptom of Mental Disorder and its Relationship to Crime

When impulsivity is viewed as a symptom of mental disorder, the emphasis is placed on the maladaptive and harmful consequences of the individual's tendency to act without thinking (see Hart & Dempster, 1997). The literature relevant to the role of such impulsivity in crime mainly consists of studies on the prevalence, in offender populations, of certain mental disorders that involve impulsivity, or on the usefulness of these diagnostic categories in predicting serious antisocial behaviour.

In youth, the combination of attention-deficit/hyperactivity disorder (ADHD) and conduct disorder (CD) may be the most potent in predicting persistent and severe delinquency (for reviews, see Dishion, French, & Patterson, 1995; Lynam, 1996). The high comorbidity rates between ADHD and CD (see Lilienfeld & Waldman, 1990) may itself be an indication that impulsivity, which is an important component of ADHD, is closely associated with delinquent behaviour (as captured by the diagnosis of CD). Unfortunately, due to necessary constraints in the breadth of the present study, the role of axis I disorders could not be investigated; rather, the focus was on relevant axis II disorders.

Among the DSM axis II disorders described in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994), two of the cluster B personality disorders are particularly well known for their impulsivity component:

antisocial personality disorder (APD) and borderline personality disorder (BPD). In addition, both are related to the commission of acts of delinquency (APA, 1994).

Most research on the relationship between these personality disorders and crime has focussed on adults. One of the reasons for this emphasis may be researchers' uneasiness with the use of personality disorder diagnoses with adolescents. This important and highly debated issue is the focus of a discussion at a later point. Here, results of studies on the prevalence of these personality disorders among delinquent adolescents are reviewed.

The DSM-IV criteria for APD require that individuals be at least 18 years old to receive this diagnosis. For this reason, researchers have often resorted to the diagnosis of (axis I) CD instead, as it captures a pattern of antisocial, aggressive, reckless and deceitful behaviour that is similar to that reflected in the criteria for APD (see Kernberg, Weiner, & Bardenstein, 1999). When the age criterion for APD is waived, the diagnosis is found to be less inclusive than the diagnosis of CD. For example, in Eppright, Kashani, Robinson and Reid's (1993) sample of juvenile offenders, 87% met criteria for CD, while 75% (all of whom were also diagnosed with CD) met criteria for APD. The discrepancy was more pronounced in a sample of male juvenile offenders studied by McManus, Alessi, Grapentine and Brickman (1984), where CD was found to apply to 97.5%, and APD to 60%, of the sample.

In the literature on adults, the high prevalence of APD among offenders has prompted researchers to seek a more specific diagnosis for the study of forensic populations. The construct of psychopathy, as described by Cleckley (1976) and operationalised by Hare (1980, 1991) has been preferred to the diagnosis of APD in these populations (Cunningham & Reidy, 1998; Hare, 1996). The antisocial features of

psychopathy (as measured by the Hare Psychopathy Checklist-Revised; PCL-R, Hare, 1991), including impulsivity, are more closely associated with the DSM-IV diagnosis of APD, in comparison with the affective and interpersonal features of the construct (see Hare, 1996). As noted in the DSM-IV, it is these additional features, such as lack of empathy, grandiosity and superficial charm, that may be more useful in discriminating psychopathic individuals among offenders (APA, 1994).

In comparison with the APD diagnosis, the CD diagnosis relies even more heavily on observable behaviour, thus lacking to an even greater extent the interpersonal and affective features of the traditional construct of psychopathy (Frick, 2000). Given this, and in light of the extremely high prevalence rates of CD among adolescent offenders (e.g., Eppright et al., 1993; McManus, Alessi et al., 1984; Richards, 1996), the construct of psychopathy also appears to be more useful with this population of adolescents (see also Forth & Mailloux, 2000). Thus, the two personality disorders that were investigated in this study were psychopathy (not APD) and BPD.

Research on the construct of psychopathy in adolescent offender populations has flourished within the past decade, with the adaptation of the Hare PCL-R into the Psychopathy Checklist-Youth Version (PCL-YV; Forth, Kosson, & Hare, 1994). With the use of a cutoff score of 30 (out of 40) with this instrument, researchers obtained rates of psychopathy among incarcerated male young offenders ranging from 27% to 37% (Brandt, Kennedy, Patrick, & Curtin, 1997; McBride, 1998).

Borderline personality disorder (BPD) has also been found to affect a certain proportion of juvenile offenders. In their study of serious adolescent offenders (mean age = 16 years), McManus, Alessi and their colleagues (1984) found that 37.5% of the males

(and 35% of the females) had a principal diagnosis of BPD, as assessed by DSM-III diagnostic criteria. Eppright et al. (1993) found a somewhat lower prevalence of BPD (based on DSM-III-R criteria) in a younger sample (mean age = 14.33 years) of incarcerated male juvenile offenders (22%), but a higher prevalence in their female counterparts (48%).

Thus, it appears that both psychopathy and BPD occur at a significant rate among adolescent male offenders. To the extent that impulsivity is an important component of these disorders, this may be an indication that impulsivity as a symptom of personality disorder is involved in adolescent delinquency. The specific manifestation of impulsivity in these personality disorders are addressed later.

The bodies of literature on the concepts of impulsivity as a personality trait and impulsivity as a symptom of mental disorder share similar strengths and limitations in their contribution to understanding the role of impulsivity in criminal behaviour. Both areas of research have mainly been concerned with finding an association between indications of impulsivity and individuals' tendency to commit crime, or the severity of their delinquent careers. Although such information is necessary, it remains very general and superficial. We have yet to ascertain whether these individuals' impulsivity also transpires as a lack of forethought in their antisocial behaviour. That is, we do not know if impulsivity and crime merely tend to occur in the same individuals, or if impulsivity is also an important characteristic of these individuals' criminal acts. One of the goals of the present study is to address this question.

Impulsive Aggression

The view of impulsivity as a type of aggression, in contrast with the other two views discussed above (on impulsivity as a personality trait or symptom of mental disorder), does lend itself to both “state” and “trait” approaches to the construct. Barratt (1994) explains that an individual who has a tendency to react with impulsive aggression “usually ‘responds’ aggressively without thinking and, following the aggressive act, often expresses guilt or remorse, vows not to commit the act again, but lacks the self-control to refrain from doing it again” (p. 71). This trait has been linked to low serotonin activity and to parietal cortex dysfunctioning (see Barratt & Slaughter, 1998).

Only a few researchers in psychology have specifically studied impulsive aggressive acts, rather than impulsive aggression as a personality characteristic. They each have offered their own operationalisation of impulsive and premeditated acts of aggression. Barratt, Stanford, Kent, and Felthous (1997) defined an impulsive aggressive act as “a hair-trigger, non-premeditated response to a stimulus that results in an immediate aggressive act or an agitated state that culminates in an aggressive act” (p. 1049). They used a four-point scale to assess whether an act was impulsive or premeditated. Prentky and Knight (1986) also used a four-point scale to assess the degree of impulsivity (or planning) involved in sexual offences. The most impulsive point applied to acts of sexual aggression where “opportunity alone, or coupled with impaired judgement (e.g., as a result of drinking) leads to an immediate assault” (p. 149), while the point of highest planning designated sexually aggressive acts that were “planned in detail, with [a] particular victim sought” (p. 149).

Impulsivity in Criminal Acts and Other Measures of Impulsivity

The few studies available so far suggest that impulsivity in acts of aggression is not necessarily related to impulsivity as a more enduring trait, at least among adult offenders (Barratt et al., 1997; Prentky & Knight, 1986). Prentky and Knight, in a file-based study of 175 sexual offenders, assessed the degree of impulsivity present in each subject's most common pattern of sexual offending. They also rated indicators of lifestyle impulsivity (employment instability and aimlessness/failure to settle down). They found that offence impulsivity was unrelated to lifestyle impulsivity, in both rapist and child molester groups.

Barratt et al. (1997) classified 57 incarcerated adult offenders as "impulsive-aggressive" and "non-impulsive aggressive", based on the degree of impulsivity or planning involved in their institutional aggressive acts. Part of the study required the participants to complete the Barratt Impulsiveness Scale – Version 10 (BIS-10; Barratt, 1985), a measure of trait impulsivity. Although the two offender groups scored significantly higher than the non-offender (and non-aggressive) control group on the BIS-10, there was no significant difference on this scale between the impulsive aggressive ($n = 27$) and the non-impulsive aggressive offenders ($n = 30$) (Barratt et al., 1997).

The results from these studies are consistent with those reviewed earlier showing very low associations between different measures of impulsivity. More importantly, these results suggest that, while the literature points to the existence of a robust association between impulsivity as an enduring trait and the commission of antisocial acts, this association may not be simply explained by a tendency for individuals who are impulsive in general, and not for nonimpulsive individuals, to commit impulsive rather than

premeditated acts of aggression. One possibility may be that trait impulsivity is associated with a lifestyle of antisocial behaviour, whether it be impulsive or premeditated.

The emphasis on violent offences in the above two studies may have contributed to the failure to find a relationship between offence-related impulsivity and lifestyle or trait impulsivity. Heilbrun and Heilbrun (1977) found that violent offences (e.g., murder, aggravated assault, robbery, sexual offences) were more typically impulsive than nonviolent offences (e.g., burglary, car theft, forgery, drug offences). Thus, the focus on violent or sexually aggressive offences may have created a floor effect on the impulsivity/planning variable (i.e., fewer offences were rated as premeditated), obscuring a potential relationship between the kind of impulsivity involved in the entire realm of criminal activity and impulsivity as a personality or lifestyle characteristic.

While there exist some studies on offence impulsivity and planning that have targeted both violent and non-violent crimes, they mainly provide descriptive information such as the proportion of offenders who commit impulsive or planned crimes and gender and racial differences in these crime characteristics. They do not compare offence-related impulsivity with other measures of impulsivity or even with other personality traits.

In summary, there are several gaps in the research devoted to offence-related impulsivity despite preliminary results calling for a better understanding of this area. First, none of this research has been conducted with adolescent offenders. Second, the available studies which compare offence-related impulsivity with other aspects of impulsivity have focussed on violent offences, despite the literature suggesting that different types of offences are characterised by different levels of impulsivity. In light of the research suggesting that offence-related impulsivity may be independent from other aspects of

impulsivity, it is crucial that more research be conducted to shed some light on these somewhat counterintuitive findings. In the present study, crime-related impulsivity was measured in both violent and non-violent crimes committed by adolescents and was compared with a common measure of trait impulsivity. Based on the results obtained by Prentky and Knight (1986) and Barratt et al. (1997), it was hypothesised that crime impulsivity would be unrelated to trait impulsivity.

Different Pathways to Impulsive Behaviour

To go beyond the measurement of crime impulsivity vs. planning, one goal of this study was to describe different types of impulsive behaviour. Newman and Wallace (1992, 1993) presented a model of impulsivity or, more generally, of deficient self-regulation, which could allow a more in-depth description of the impulsivity involved in criminal acts.

The model is based on Gray's theory of arousal, which describes three major systems that govern approach and stop/inspect behaviour. Gray's theory was originally formulated to explain empirical findings from pharmacological studies on animals, but has now been used to explain human behaviour as well (Carver & White, 1994). In this theory, the Behavioural Activation System (BAS, also called Behavioural Approach System) is responsible for controlling both approach and active avoidance behaviour, and is responsive to reward cues (Gray, 1991). It is associated with positive emotions such as elation, happiness and hope (Carver and White, 1994). The Behavioural Inhibition System (BIS) controls stop/inspect behaviour, and is responsive to cues for punishment or non-reward (Gray, 1991). It is thought to be associated with negative emotions such as anxiety, fear, frustration and sadness (Carver & White, 1994). The action of the BIS and that of the

BAS are mutually inhibitory. The Non-Specific Activation System (NAS) is postulated to be activated by any of the BAS or the BIS, and serves to increase the intensity or the speed with which the behaviour occurs (either approach/actively avoid or stop/inspect behaviour) (Gray, 1991).

It is assumed that individuals differ in the sensitivity of their three arousal systems. Although the action of the BAS and the BIS are mutually inhibitory, their sensitivities would be orthogonal, given that the neurological systems underlying them are independent (Carver & White, 1994). This would allow an individual to have, for example, a strong BAS and a normally sensitive BIS. According to Gray himself, the strength of the BAS determines how impulsive will a given individual be (Gray, 1991). Newman and Wallace (1992, 1993), however, propose that three pathways may be mapped onto Gray's three-arousal model to describe different ways in which individuals may act impulsively. They suggest that individual differences in BAS, BIS and NAS sensitivities determine which pathway would be more likely to characterise the impulsive acts of different persons.

One pathway is hypothesised to be mediated by the combined activities of a highly sensitive BAS and a very reactive NAS. Within this pathway, the subject would experience a strong desire or attraction for something which would prevent him/her from stopping to consider the possible consequences of his or her acts (Newman & Wallace, 1992).

Newman and Wallace (1993) explain that, in response to a reward cue, individuals with such a predisposition would become highly aroused due to the convergent actions of their BAS and NAS. Given the inhibitory effect of the BAS on the BIS, they would be less likely to interrupt their behaviour to evaluate potential incoming punishment stimuli, and would be at high risk to engage in approach behaviour with little delay.

Another pathway is believed to be initiated by punishment cues rather than by reward cues (Newman & Wallace, 1992, 1993). An individual with a highly sensitive BIS could become impulsive when avoidance of an aversive situation seems impossible. The authors call this type of impulsivity "anxious impulsivity". Other affects may be involved such as guilt and self-disgust (Newman, personal communication, April 7th, 2001). In this type of impulsive behaviour, the individual becomes so emotionally involved that he or she is unable to think rationally about the consequences of his or her act (Newman & Wallace, 1992).

The final pathway proposed in 1992 was thought to be reflective of a deficient BIS, which would lead to a general lack of inhibition that would manifest itself under a wide variety of circumstances. Newman and Wallace (1992) suggested that an individual may act impulsively because he fails to perceive or does not care about the consequences of his acts. In this case, the actor need not be strongly driven toward some object and would not necessarily be unresponsive to punishment cues, but would be unable to interrupt his/her behaviour to respond to such cues.

In 1993, Newman and Wallace elaborated this third pathway further and suggested that it may be mediated by a general deficit in attention. Rather than resulting from a dysfunction of the BIS alone, this pathway could be mediated by a deficit in integrating input to both the BIS and the BAS. The individual, when engaged in a given behaviour, would be unable to automatically switch attention toward internal or external cues indicating that the behaviour is maladaptive. Newman and Wallace (1993) believe that this deficit is unrelated to the individual's motivational state, which in some way contradicts their previous suggestion (Newman & Wallace, 1992) that this kind of impulsivity reflects

that the individual does not care about the consequences of his act. Instead, they emphasise that this deficit is the reflection of a cognitive style characterised by narrow, goal-directed thinking (Newman, personal communication, April 7th, 2001).

The Newman and Wallace model of different pathways to deficient self-regulation, because of its roots in Gray's theory of arousal systems, can be used to characterise enduring individual differences as well as to describe specific impulsive acts. As with impulsive aggression, then, it lends itself to both "trait" and "state" study approaches. In this study, impulsive criminal acts were described by one of the three pathways, based on the motivational and cognitive qualities of the specific acts. From these descriptions, summary scores were derived and used to investigate individual differences.

Typologies of Aggression

Typologies of violence offer another way of describing both specific acts and more stable individual characteristics. There have been several different schemes offered to classify aggression in animals, and in human children and adults. As there are no typologies specifically tailored for adolescents, researchers studying aggression in young offenders have borrowed from the existing adult and child typologies.

In research with adults, a common distinction is made between instrumental and hostile or reactive aggression. Berkowitz (1993) defines instrumental violence as violence where the harm to the victim is secondary to the aggressor's main objective, such as obtaining an object or a feeling of power and dominance. This goal-directed type of aggression is thought to be mediated by the individual's expectation of reward and his or

her prior history of reinforcement for aggression' (Kingsbury, Lambert, & Hendrickse, 1997).

Hostile aggression, in contrast, is directly aimed at harming the target (Berkowitz, 1993). It is associated with high emotional arousal, usually involving rage, frustration or fear (Kingsbury et al., 1997). In a study conducted by Cornell et al. (1996), the authors used a category called "hostile/reactive aggression". The combination of these two qualifiers illustrates the role of perceived provocation and threat that is often described with hostile aggression. Kingsbury et al. (1997) suggest that the goal of this type of aggression may be to eliminate the source of frustration or annoyance. This is reminiscent of Newman and Wallace's (1993) description of their second pathway to impulsive behaviour, in which the inability to flee an aversive situation leads to the commission of impulsive aggression.

In the literature on children, a common distinction is made between proactive and reactive aggression. Proactive aggressive acts are committed in the absence of preceding perception of threat or provocation, to harm or dominate the other (Brown, Atkins, Osborne, & Milnamow, 1996). Dodge and Coie (1987) make a further distinction between hostile-proactive aggression and instrumental-proactive aggression. Hostile-proactive aggression is aimed at dominating the person, while instrumental-proactive aggression is used to obtain a object. Reactive acts of aggression are those which are committed in reaction to a perceived threat or provocation.

Although they have often been used interchangeably, the two typologies described above are not entirely equivalent (Pulkkinen, 1996). In the first typology, which distinguishes between instrumental and hostile/reactive types, the emphasis is placed on

the goal of the aggression (achievement of a secondary goal vs. harm to the victim). However, in the second typology, where the contrast is between proactive and reactive aggression, the emphasis is on the instigation of aggression (non-provoked vs. victim-provoked). Nevertheless, the reactive and hostile/reactive categories of aggression from both typologies are mostly parallel to each other, and the proactive category as defined by Dodge and Coie (1987) would capture most of the same instances of aggression as the instrumental category from the other typology.

Most writers remark that there is substantial overlap and comorbidity among different subtypes of aggression (Kingsbury et al., 1997; Vitiello & Stoff, 1997). For example, a given act of aggression may involve aspects of both instrumental and hostile/reactive subtypes. Moreover, a given individual may demonstrate these different subtypes of aggressive acts on different occasions. For this reason, different approaches to the study of these subtypes of aggression were used in the present investigation.

The Role of Impulsivity in Typologies of Aggression

Except in the dichotomy between impulsive and premeditated aggression (Barratt et al., 1997), impulsivity has generally occupied only an implicit place in violence typologies. Vitiello and Stoff (1997), after a review of different typologies of aggression in children, presented two general subtypes which include a distinction between impulsive and controlled aggression. Their classification encompasses several other dichotomies made in the literature based on the motivation (hostile vs. instrumental), the role of emotions (affective vs. predatory), and the roles of the aggressor and the victim as instigators (proactive vs. reactive) in the aggressive act. The first subtype involves acts of aggression

that are committed impulsively, in reaction to a perceived threat or provocation, or out of hostility. These acts are accompanied with important emotional arousal. The second subtype involves controlled, predatory acts of aggression, committed proactively, for a purpose other than harming the victim (Vitiello & Stoff, 1997).

This link between hostile/reactive aggression and lack of behavioural control is commonly implied in descriptions of this type of aggression (e.g., Cornell, 1996; Kingsbury et al., 1997). In fact, because of the presence of perceived provocation and the hypothesised role of emotional arousal in hostile/reactive aggression, these acts appear more likely to be committed as an immediate, non-premeditated response to situations of conflict. Nevertheless, it seems possible that an individual who feels provoked or attacked by someone else waits until a better time comes to retaliate, resulting in premeditated acts of hostile/reactive aggression (see Cornell, 1996).

In the two studies on hostile/reactive and instrumental crimes reported by Cornell et al. (1996), raters assessed the presence of several features of participants' index offence such as planning, anger, etc. In a subsample of 50 violent offenders from the first study, the authors found a significant difference in offence planning between the two categories of offenders, with hostile/reactive offenders being less likely to plan their offence than instrumental offenders. However, hostile/reactive offenders were almost as likely to plan their offence (15 offenders) as they were to commit it impulsively (18 offenders). In this study, most instrumental offenders planned their crime (14 out of 17).

In the second study, with another sample of 50 violent offenders, Cornell et al. (1996) found no difference in planning between the two groups of offenders. While more hostile/reactive offenders committed their index offence impulsively (20 vs. 9), there was

only a slight difference between the number of instrumental offenders who planned their offence (11) and those who did not (9). These findings support the hypothesis made above about the possibility of premeditation in some hostile/reactive acts of violence. In addition, these findings show that it is possible for individuals to commit instrumental acts of aggression that are either planned or impulsive (see also Hart & Dempster, 1997).

Types of Aggression, and Trait or Symptom Impulsivity

Impulsivity as a trait or as a symptom of mental disorder has been related to different types of aggression in children. Atkins and Stoff (1993) operationalised instrumental and hostile aggression in a computer game paradigm they used with children. They invited three groups of 8-to-12-year-old boys to play a competitive game against a (fictitious) opponent over the computer. The children were allowed to commit two types of “aggressive” acts to disrupt their opponent’s game: instrumental aggression (freezing their opponent’s game) and hostile aggression (sending a white noise to their opponent’s ears).

The results showed that aggressive boys with ADHD were more likely to resort to hostile aggression than the non-clinical and non-aggressive (control) group of boys, while the two aggressive groups (with and without ADHD) were more likely to commit instrumental aggressive acts than controls. This may indicate that aggressive boys with higher impulsivity (as a symptom of ADHD) are at increased risk to commit hostile aggressive acts (Atkins & Stoff, 1993).

Studies on the relationship between individual differences in proactive and reactive aggression and individual differences in trait impulsivity have yielded mixed results, depending on the way the types of aggression were defined and measured. When reactive

aggression is viewed as a relatively normalised act of self-defence (as in Pulkkinen, 1996), children classified as reactive-aggressive are less impulsive than their proactive-aggressive counterparts. In a longitudinal study, Pulkkinen (1996) found that adolescents who were classified as proactive-aggressive at age 14 were more impulsive in childhood, adolescence and adulthood than those classified as reactive-aggressive.

However, when reactive aggression is conceptualised as an overreaction to perceived provocation (as in Dodge & Coie, 1987), different results are obtained, even with similar measures of trait impulsivity. Dodge, Lochman, Harnish, Bates, and Pettit (1997) found that the pervasively aggressive group of children (i.e., those who engaged in both proactive and reactive aggression) were the most impulsive, followed by both the reactive-only and proactive-only groups, which did not differ from each other, and which were both more impulsive than the non-aggressive group.

With adult offenders, Cornell et al. (1996) found higher levels of psychopathy (as assessed by the PCL-R) among instrumental offenders than among hostile/reactive offenders. The method used to classify participants, however, overemphasised the presumed uniqueness of instrumental aggression. As a way to accommodate the fact that most of the offenders who had committed acts of instrumental violence had also been convicted of at least one incident of hostile/reactive violence, Cornell et al. defined as instrumental offenders those who had been convicted of at least one instrumental act of aggression, regardless of their history of hostile/reactive aggression, and defined as hostile/reactive those offenders whose history of violent convictions only involved hostile/reactive aggression.

A problem with the classification scheme used by Cornell et al. (1996) is that it ignored the possibility that there may exist a variety of different purposes behind instrumental acts of violence that are more or less common among offenders. In a similar study based on the same operational definitions of hostile/reactive and instrumental aggression, Hervé, Petitcherc and Hare (1999) found a very low proportion of purely hostile/reactive offenders among a small sample of Canadian federal offenders. Thus, they used an additional index of instrumental aggression: ratio of instrumental to hostile/reactive violent convictions. With either index of instrumental aggression, no difference was found on psychopathy among the hostile/reactive and the instrumental groups of offenders. When instrumental offences (for the most recent conviction) were classified according to the specific goals leading to the aggression, it was found that offenders who were motivated by internal purposes, such as obtaining social recognition and dominating the victim, were more psychopathic than those who committed instrumental aggression to obtain drugs or sex. Because of the very small sample used in this study, replications are needed before strong inferences can be made about the results.

In the present study, each violent offence was rated as hostile/reactive or instrumental. Then, individual offenders were classified according to the types of violent crimes they committed, and these offender categories were compared on personality disorders and on their different pathways to impulsive behaviour.

A number of hypotheses were generated. On the basis of the Cornell et al. (1996) results, it was hypothesised that offenders who committed instrumental violent crimes would be more psychopathic than offenders whose violent crimes were exclusively hostile/reactive. To investigate the possible implications of different forms of instrumental

aggression, instrumental offences were further separated into more specific goals (e.g., material, drugs, social recognition) and divided into internal and external categories. Following the preliminary results obtained by Hervé et al. (1999), it was hypothesised that offenders who committed internally-motivated instrumental crimes would be more psychopathic than offenders who committed only other types of offences.

Then, given the importance of emotional arousal in descriptions of hostile/reactive aggression, it was hypothesised that the commission of these offences would be more likely to be characterised by Pathway B impulsivity (Emotional Reaction). The commission of impulsive instrumental offences, in contrast, would be more likely to be associated with either Pathway A impulsivity, in which a strong desire for an object interferes with the subject's ability to think before acting, or Pathway C impulsivity, where the individual's attention is narrowly focussed on an immediate goal, no matter how important.

No specific hypothesis was formulated to address potential differences in trait impulsivity between hostile, reactive and instrumental offenders, since the studies available so far focussed on more enduring aggressive tendencies (proactive or reactive) rather than the classification of specific aggressive acts.

Personality Disorders in Adolescents

As seen previously, psychopathy and, to a lesser extent, borderline personality disorder are often present in adolescent offender populations. Here, the nature of the impulsivity that characterises each of these disorders are explored. Then, hypotheses are formulated regarding the role of different pathways to impulsive behaviour in the crimes

committed by individuals with marked traits of these personality disorders. First, however, it is necessary to discuss the important controversies associated with the diagnosis of personality disorders in adolescents.

Kernberg et al. (1999) identify two reasons which may underlie the common reluctance to diagnose or study personality disorders in children and adolescents. First, given their pervasiveness and severity, and the poor prognosis associated with these disorders, clinicians may fear the impact of such diagnoses on the young individual's self-perception and on others' reactions (Kernberg et al., 1999). Indeed, the risks associated with diagnosing adolescents with disorders that are so severe and difficult to treat cannot be ignored. With such powerful labels as "psychopath" or "personality disordered", some of these youths might be excluded from certain types of treatment, or more subtly denied the opportunity to change. On the other side of this issue is the need to identify these high-risk youths in order to intervene as early as possible and prevent their further suffering and further damage to others around them (Kernberg et al., 1999). The benefits of early diagnosis, however, can only exist to the extent that these diagnostic categories are valid in adolescents.

The second reason identified by Kernberg et al. (1999) speaks to this point. They note that some researchers and clinicians view it as illogical to diagnose a personality disorder prior to adulthood, as they consider that personality is not completely developed until that point. It appears, however, that the point of disagreement is not whether children and adolescents have a personality (as would be suggested by Kernberg, 1990), but how much stability in personality is required for a diagnosis of personality disorder (see Shapiro, 1990).

The American Psychiatric Association, in its current DSM (APA, 1994), raises more specific issues that are potential impediments to the validity of personality disorder diagnoses prior to adulthood. The APA's view is that the diagnosis of personality disorders in adolescents (and children) "may be applied (...) in those relatively unusual circumstances in which the maladaptive personality traits appear to be pervasive, persistent, and unlikely to be limited to a particular stage or an episode of an Axis I disorder" (p. 631). In essence, the APA is expressing doubt as to the possibility that its general criteria for the diagnosis of a personality disorder (long-term stability and broad-ranging impairment) can be met in young persons.

The questions of whether the maladaptive traits are pervasive, or whether they are better explained by an axis I disorder, are important issues to deal with at the time of assessment (see Kutcher & Korenblum, 1992). The stability of personality disorder symptoms over time and the difficulty in evaluating them at certain developmental stages are two issues that have been the focus of more specific study and reflection.

Edens, Skeem, Cruise and Cauffman (2001) raise important questions about the validity of several traits diagnostic of psychopathy in adults when applied to the adolescent population. They argue that traits such as sensation-seeking, impulsivity, and irresponsibility, because of their higher prevalence in adolescents in general, are not diagnostic of the disorder and risk leading to the overdiagnosis of psychopathy among this age group. They note that most of these problematic traits are assessed as part of the antisocial behaviour component (factor II) of the Hare PCL-R. In addition, based on studies showing the development of social perspective-taking and self-identity, they suggest that factor I features (the affective/interpersonal factor of the PCL-R), such as lack

of empathy, failure to accept responsibility and grandiose sense of self-worth, may also be more common in the general adolescent population.

The fact that there is a higher base rate of these traits in the adolescent age group compared with adults is not, in itself, a threat to the validity of these items, so long as psychopathic youths still demonstrate higher levels of these traits than nonpsychopathic youths. In this case, proper assessment of these traits among young offenders rests on the evaluator's familiarity with the presentation of these features among this population and his or her ability to assess the presence and severity of each symptom on the basis of the appropriate comparison group. In order to ascertain whether high levels of these traits are indicative of the construct of psychopathy as it is understood and assessed in adults, however, studies are necessary that evaluate the stability of these symptoms over time and their pattern of associations with known correlates of adult psychopathy. These topics are addressed later.

In the case of BPD, a number of symptoms of the disorder as it is described in adults are also quite characteristic of normal adolescents (Kutcher & Korenblum, 1992). For instance, struggles around identity, behavioural modulation problems, and ambivalence about dependence/autonomy in relationships (especially with parents) are part of the normal challenges of this developmental period (Kutcher & Korenblum, 1992). This problem in diagnosis may be exacerbated in delinquent populations, where features of borderline personality disorder such as impulsivity and anger may be more common than in the general adolescent population. In the McManus, Alessi, et al. (1984) study, of the 40 (out of 71) adolescent offenders who were given neither a primary nor a secondary diagnosis of BPD, an important proportion had features of BPD. Three of the BPD criteria

(impulsivity, intense anger and disturbed interpersonal relationships), were present in about three quarters of these non-borderline youths.

With young offenders, it may be particularly difficult to distinguish between youths with borderline personality disorder and those who are suffering from a major depressive disorder. In the same sample studied by McManus, Alessi et al. (1984), McManus, Brickman, Alessi and Grapentine (1984) reported no difference between the group of young offenders diagnosed with major affective disorders and the group diagnosed with BPD on their scores on the Diagnostic Interview for Borderlines (DIB; Gunderson, Kolb, & Austin, 1981), the first version of a diagnostic instrument commonly used to assess BPD in adults. The failure to distinguish between borderlines and depressive youths was mainly due to the fact that depressed adolescent offenders, like offenders with BPD, also presented with impulsivity and relationship problems (McManus, Brickman et al., 1984).

The DSM-IV suggests that, given that the above-specified conditions are met, diagnoses of personality disorders in children or adolescents should be made when the criteria are met for at least one year (APA, 1994). Unfortunately, studies on the stability of personality disorders during adolescence, or between adolescence and adulthood, are relatively scarce.

Among studies that used standard diagnostic criteria for BPD (either the DSM criteria or the DIB) and also used control groups, the general finding is that only a small proportion of individuals diagnosed with the disorder as adolescents still qualify for the diagnosis a few years later. Proportions of adolescents who still met criteria for BPD after follow-up periods of an average of 2 to 3 years ranged from 14% (Meijer, Goedhart, & Treffers, 1998) in a small sample of inpatient adolescents assessed with the DIB, to a

somewhat higher rate of 33% (Garnet, Levy, Mattanah, Edell, & McGlashan, 1994) in a larger sample of older adolescent inpatients (mean age = 17, compared with 15.4 years in the Meijer et al. study) assessed with the DSM-III-R criteria. Given the poor diagnostic stability of BPD in adolescents, Garnet et al. (1994) recommended against the use of such specific diagnostic categories with severely disordered adolescents. They suggested that the symptoms that lead to hospitalisation in these youths may be consistent with BPD, but may not reflect enduring personality pathology.

Results from a study conducted by Mattanah, Becker, Levy, Edell, and McGlashan (1995) argue against this suggestion, and are equally inconsistent with the hypothesis that the treatment given to patients between baseline and follow-up may entirely explain the lack of stability between the two testing periods. In this study, Mattanah et al. used discharge diagnoses as baseline (rather than intake diagnoses as in other studies), and measured stability against a re-assessment of the former patients two years later. At follow-up, only 7 of the 31 patients (22.5%) originally diagnosed with BPD were given the same diagnosis. In addition, 8 former patients who did not meet BPD diagnostic criteria at discharge were given the diagnosis at follow-up.

A similar stability rate for BPD (24%) was found after a two-year follow-up of a large community sample of adolescents (Bernstein et al., 1993). This study showed that prevalence of BPD peaks when adolescent males are between the ages of 18 and 21. Notwithstanding its low stability, an elevation on the BPD symptoms at baseline was found to increase the risk of the same elevation after two years by 13.1 times.

Taken together, these studies suggest that BPD (as well as other personality disorders, see Bernstein et al., 1993) have low stability rates for adolescents, especially

when the original diagnosis is made in early adolescence. At this point, it may be safe to view adolescents diagnosed with BPD as having severe maladaptive personality traits, rather than viewing them as future borderline adults.

In the case of psychopathy, prospective studies addressing the stability of the personality disorder traits are simply nonexistent (Edens et al., 2001), presumably due to the only recent development of assessment instruments for children and adolescents. There is, however, a great amount of research supporting the stability of antisocial behaviour over the lifespan for severe and pervasively antisocial children (see Caspi & Moffitt, 1995). Unfortunately, since the diagnosis of psychopathy (as assessed by the Hare PCL and its derivatives) involves more than antisocial behaviour, these studies are of only limited usefulness to the question of stability of psychopathy *per se*.

Retrospective research on adult psychopathic offenders suggests that these individuals demonstrated severe behavioural problems as children. Because of their retrospective nature and their emphasis on behaviour rather than personality traits, however, little can be inferred about whether psychopathic-like traits and behaviours in childhood or adolescence will specifically lead to future psychopathy. Clearly, more prospective longitudinal research is needed to document the stability of this disorder.

The risks and ethical issues of labelling adolescents with such pervasive disorders as psychopathy and borderline personality disorder are important. The artificiality of categorical diagnoses, the uncertainty about the developmental appropriateness of the diagnostic criteria and the lack of stability (or lack of information on stability) of these disorders further enhance these concerns. In the present study, as an attempt to acknowledge the uncertainty about the validity of these diagnostic categories, the presence

of psychopathy or borderline personality disorder were examined from a dimensional perspective. This also underlines our position that an emphasis on personality disorder traits may be more useful than an emphasis on whole disorders in describing adolescent offenders and predicting the characteristics of their crimes.

Measurement of Psychopathy

Psychopathy is a disorder characterised by a pervasive lack of concern for others, inability to experience deep emotions, a tendency to lie and manipulate other people to satisfy one's immediate desires, and a pattern of impulsive, irresponsible and delinquent behaviour (Hare, 1991). The construct was first operationalised with a list of criteria written by Cleckley (1976) on the basis of several years of observation of psychiatric patients. Hare (1980) used Cleckley's criteria to construct the Psychopathy Checklist (PCL), a scale for the assessment of psychopathy in adult forensic populations. The 1991 revision of the PCL has demonstrated excellent psychometric properties (see Bodholdt, Richards, & Gacono, 2000, for a recent review).

Two moderately correlated factors were found to compose the Hare PCL-R (Harpur, Hare, & Hakstian, 1989) and have traditionally been used to describe, on the one hand, the interpersonal and affective features of the disorder (e.g., grandiosity, callousness, manipulateness; Factor I) and, on the other hand, its antisocial features (e.g., failure on conditional release, early behavioural problems; Factor II). More recently, Cooke and Michie (2001) tested, validated and cross-validated a three-factor model, which separates the interpersonal from the affective features of the disorder and dissociates the impulsivity/irresponsibility items from the items related to criminality. The three factors

were labelled Arrogant and Deceitful Interpersonal Style (Factor 1), Deficient Affective Experience (Factor 2), and Impulsive and Irresponsible Behavioural Style (Factor 3). This conceptualisation is now seen as most promising, given both its strong empirical basis and its theoretical appeal.

The Hare Psychopathy Checklist—Youth Version (PCL-YV; Forth, et al., 1994) is a modified version of the Hare PCL-R, which attempts to reflect the particularities of adolescents (e.g., increased role of friends and family, reduced opportunities for independent living). The research conducted so far suggests that the PCL-YV has excellent psychometric properties and a pattern of associations with other variables that parallels that found with the adult Hare PCL-R (see Forth & Mailloux, 2000, for a review). More specific psychometric information are provided in the Method section.

Impulsivity in Psychopathy

Impulsivity occupies an important place in psychopathy. According to Hart and Dempster (1997), all three different meanings given to impulsivity (i.e., impulsivity as a trait, as a symptom and as a type of aggression) are present in the disorder. On the PCL-YV (and on the PCL-R), impulsivity is integrated into at least four different items. Items 13 (Lacks goals) and 17 (Unstable interpersonal relationships) reflect lifestyle impulsivity, Item 14 (Impulsivity) describes both trait and symptom impulsivity, while item 10 (Poor anger control) involves impulsive aggression (see Hart & Dempster, 1997; see also Prentky & Knight, 1986).

Within Cleckley's (1976) 16-symptom description of psychopathy, trait or lifestyle impulsivity is reflected most directly in "Failure to follow any life plan". The nature of

psychopaths' symptom impulsivity is captured in the criteria "Inadequately motivated antisocial behaviour" and "Poor judgement and failure to learn by experience". In his description of these symptoms, Cleckley presents the picture of a type of individuals who will often commit self- and other-damaging acts with no justification and often simply on the basis of a whim. Psychopaths will ruin opportunities for their own success (e.g., a long-sought parole, a decent job) and will cause great trouble and hardship to others in responding to immediate desires they themselves would not necessarily regard as incredibly compelling (Cleckley, 1976).

This aspect of the disorder has been studied extensively by Newman and his colleagues, who view psychopathy as "the most extreme form of human disinhibition" (Gorenstein & Newman, 1980, p. 313). In their typical studies, this group of researchers utilise computerised tasks, such as the go/no-go discrimination task, to study potential deficits in passive avoidance learning. Passive avoidance learning occurs when the subject "[learns] to inhibit behaviours that lead to punishment" (Arnett, Howland, Smith, & Newman, 1993, p. 173).

In the go/no-go discrimination task (described in Newman & Kosson, 1986), participants are shown stimuli from a set of eight two-digit numbers, one at a time, and are required to either push a button (positive response) or to not respond. A response to four of the numbers is associated with monetary gain (or absence of monetary loss, depending on the specific version of the task), while a response to the other four is associated with punishment (or absence of reward). Participants must learn, through trial-and-error, which numbers are reinforced and which are punished. Highest performance levels are achieved when subjects are able to both respond to most positive stimuli, and inhibit their response

to most negative stimuli. A deficit in passive avoidance learning is inferred from higher levels of commission errors (responding to non-rewarded numbers) and smaller amounts of money at the completion of the task (Newman & Kosson, 1986).

Psychopaths, like neurotic extraverts, are known to show deficits on this task. Gorenstein and Newman (1980) presented two of the early hypotheses about the origin of psychopaths' deficit in passive avoidance learning. The first hypothesis posited that this deficit was mediated by an insensitivity to cues for delayed punishment. Another hypothesis attributed the deficit to a state of underarousal which would lead psychopaths to actively seek high levels of sensory stimulation. This could explain psychopaths' tendency to engage in high-risk behaviour, including behaviour that may lead to punishment. In Gray's model's terms, psychopaths were either thought to have an underactive BIS or an overactive BAS. However, Newman and his colleagues later suggested that demonstrations of a deficit in passive avoidance learning in psychopaths may be better explained by a more general attention deficit (Newman, Patterson, Howland, & Nichols, 1990).

In Newman and Kosson's (1986) study, adult psychopathic offenders, while they committed more passive avoidance errors than nonpsychopathic offenders in a go/no-go discrimination task involving both reward and punishment, performed just as well as controls on a version of the task involving punishment only (i.e., monetary loss for both responding to negative stimuli and failing to respond to positive stimuli). The authors interpreted these results as evidence against the idea that psychopaths' deficit in passive avoidance learning is due to a lower sensitivity to punishment (or an underactive BIS). The same pattern of findings was obtained in a community sample of adolescents (Newman, Widom, & Nathan, 1985). However, the use of the "psychopathic deviate" scale from the

MMPI to designate adolescents as psychopathic is of questionable validity (see Edens et al., 2001) and, consequently, the existence of the same phenomenon in adolescents as found in adults should be considered uncertain until such research is conducted with a more valid instrument.

In a series of three experiments, Newman et al. (1990) again found that the presence of reward was necessary for the demonstration of a deficit in passive avoidance in adult psychopathic offenders. Further, they ruled out the hypothesis that a high sensitivity to reward (an overactive BAS) was responsible for the deficit. In the first study, they presented the four positive stimuli (i.e., rewarded numbers) in the first four trials, while the remaining 96 trials consisted of 12 random presentations of all eight numbers (i.e., four positive and four negative stimuli). This high probability of winning at the beginning of the task was used for the purpose of establishing a dominant response set for reward (Newman et al., 1990). In this condition, psychopathic offenders committed significantly more passive avoidance errors than nonpsychopathic controls.

In the second study, Newman et al. (1990) modified the task so as to prevent both the establishment of a dominant response set at the beginning of the task, and the reliance on only one type of stimuli to perform the task (e.g., learning to respond to positive stimuli and to not respond to any other stimuli). With this task, they found no significant differences in the levels of passive avoidance learning of the psychopathic and nonpsychopathic offenders (Newman et al., 1990). In a third study, they showed that psychopathic offenders, unlike neurotic extraverts (e.g., Patterson, Kosson, & Newman, 1987), are no more reactive to reward cues than nonpsychopathic controls. These results taken together indicated that it may not be the *presence* of reward but, rather, the

establishment of a response set for reward, that may be responsible for psychopaths' deficit in inhibiting behaviour to avoid punishment in conditions involving both reward and punishment (Newman et al., 1990).

Thus, Newman et al. (1990) suggested that the nature of psychopaths' deficit is in the inability to switch their attention to non-dominant stimuli (cues for punishment) while engaged in reward-seeking behaviour. This is reminiscent of Cleckley's (1976) description of psychopaths' tendency to act on their whims, regardless of how much they are attracted to the goal, while failing to realise the potential damaging consequences of their acts.

Newman and Wallace (1993) propose that, for psychopathic individuals, the predominant pathway to deficient self-regulation would be the one (described previously) in which the motivational aspect of the impulse is only of limited relevance, but where a narrow, unidimensional way of thinking leads to a failure to inhibit any impulses to act.

A second mechanism that may lead to impulsive behaviour, especially of a violent kind, in psychopaths, is apparent in descriptions of these individuals' low tolerance to frustration. Item 10 of the PCL-YV, "Poor anger controls", describes adolescents who will easily become angered and aggressive in response to any perceived provocation. Cleckley (1976) explains that only "moderate vexation suffices" to cause angry and violent outbursts in these individuals (p. 341). Physiological data suggesting that psychopathic offenders have rapid increases in arousal when they anticipate punishment are consistent with this hypothesis. Hare (1970) notes that, in contrast with non-psychopathic offenders, psychopathic offenders display an increase in skin conductance that is much sharper and comes later after the presentation of the punishment cue, when the punishment becomes imminent.

Hence, the second pathway to impulsive behaviour proposed by Newman and Wallace (1993), where the intensity of the emotion interferes with the individual's ability to think about the consequences of his acts and to inhibit them, may also be at play in some of psychopaths' violent impulsive behaviour. Even though psychopaths are thought not to experience deep and complex emotions, they may still experience a high level of arousal in association with simple and superficial feelings of irritation, frustration or anger. This rapidly mounting negative arousal, especially in combination with their characteristic lack of empathy, may put psychopathic individuals at a high risk of acting out on their anger or simple frustration.

The fact that this form of disinhibition has not been associated with psychopathy in the studies conducted by Newman and his colleagues is probably due to the low likelihood for the laboratory tasks used to elicit high levels of anger or frustration. While research participants may experience these feelings in reaction to their losses of money during the go/no-go task, it is unlikely that the intensity of these feelings could match that of the anger or frustration that would arise from interpersonal disputes. Instead, in the studies conducted so far, this pathway to disinhibited behaviour has been associated with anxiety (see Newman & Wallace, 1993), not with anger.

In summary, two different mechanisms may be involved in psychopathic individuals' impulsive criminal behaviour. First, a deficit in integrating non-dominant stimuli while engaged in goal-directed behaviour may lead them to commit impulsive acts for goals that are not necessarily entertained at high value. Second, a lack of behavioural control in situations of anger or frustration may lead them to commit impulsive acts of violence.

In addition to being at risk for different kinds of impulsive criminal behaviour, psychopaths may also be at risk to commit premeditated crimes (Hart & Dempster, 1997). Dempster, Lyon, Sullivan, Hart, Smiley, & Mulloy (1996, as cited in Hart & Dempster, 1997) found that, while crime planning was negatively associated with the impulsive, irresponsible and antisocial features of psychopathy (the traditional PCL-R Factor 2, with Factor 1 partialled out), it was positively associated with the affective and interpersonal features of psychopathy (e.g., callousness and lack of empathy, shallow affect, manipulateness; the traditional Factor 1 of the PCL-R, with Factor 2 partialled out). In their study, there was no correlation between crime planning and total scores on the PCL-R.

Impulsivity in Borderline Personality Disorder

Borderline personality disorder (BPD) is another disorder in which impulsivity plays an important role. In general, individuals with BPD experience immense affective instability, constant anger and instability in their interpersonal relationships and their self-concept, are prone to impulsive behaviour involving substance abuse, promiscuous sex, and self-mutilation, and may experience temporary psychotic symptoms (APA, 1994; Linehan, 1993).

In adolescence, individuals with BPD show neurotic symptoms which are developmentally inappropriate (e.g., obsessions, phobias), and they experience identity problems at a greater level than do others at this point in development (Kernberg et al., 1999). Like borderline adults, adolescents with this personality disorder use such defence mechanisms as splitting, projection and denial (Kernberg et al., 1999). Splitting involves

separating one's good and bad perceptions of oneself or of another person. Such a mechanism can help explain borderline individuals' interpersonal difficulties. When they perceive others as "all good", they are likely to behave in a complimenting and even clinging manner toward them, only to devalue them and act aggressively toward them soon thereafter, when they have shifted their view of the other person to that of the "all bad".

Over the evolution of the diagnostic criteria, BPD has been conceptualised as a part of various spectrums of mental disorders. First viewed as a disorder lying between psychoses and neuroses, it was later seen as closer to psychotic disorders and, about twenty years ago, as part of the affective disorders (New, Trestman, & Siever, 1995). More recently, BPD has been presented as a disorder of impulse control (see Gunderson, Zanarini, & Kisiel, 1991).

The criteria for BPD cover at least two of the three meanings of impulsivity described by Hart and Dempster (1997). First, symptom impulsivity forms one of the four sections of the Revised Diagnostic Interview for Borderline Patients (DIB-R; Gunderson & Zanarini, 1992). The "Impulse Action Patterns" section includes maladaptive impulsive behaviour in the spheres of substance abuse, sexual behaviour, self-mutilation and suicidal attempts, and criminal behaviour. The DSM-IV also includes criteria for similar impulsive behaviours. Second, impulsive aggression is captured in BPD criteria for self-aggression (self-mutilation and suicidal attempts) and other-aggression (anger outbursts and recurrent fights) (see also Gunderson et al., 1991).

Studies show that impulsive behaviour is highly prevalent in borderline individuals (e.g., Zanarini, Gunderson, Frankenburg, & Chauncey, 1989), supporting its importance in the diagnosis (New et al., 1995). Nevertheless, although it is viewed as a core symptom of

the disorder, impulsive behaviour is not specific to BPD, but is common to cluster B personality disorders (which also include histrionic, narcissistic, and antisocial personality disorder) (New et al., 1995). Silverman et al. (1991) found an increased risk of impulsive behaviours (e.g., fighting, binge eating, self-damaging acts, irrational angry outbursts, etc.) in relatives of adult BPD probants when compared with relatives of probants with other personality disorders and relatives of probants with schizophrenia. The results of this study must be interpreted cautiously as APD was not included in the group of probants with other personality disorders.

Zanarini et al. (1989), using a large sample of inpatient and outpatient adults diagnosed with personality disorders, examined the extent to which each of the 22 summary statements from the DIB-R (Gunderson & Zanarini, 1992) discriminated participants diagnosed as borderline from those diagnosed with other DSM-III personality disorders. They found that impulsive behaviour involving substance abuse, sexual promiscuity and other areas (i.e., binge eating, shoplifting, assault) were not significantly more common in borderline patients than in other personality disordered patients. However, impulsive behaviour involving self-mutilation and manipulative suicidal behaviour significantly discriminated borderline from other personality disordered participants, among whom these behaviours were quite uncommon. As the authors note, the important proportion of participants diagnosed with antisocial personality disorder in the control group may explain why other types of impulsive behaviour failed to discriminate BPD from other personality disorders, as they had in previous studies (e.g., Frances, Clarkin, Gilmore, Hurt, & Brown, 1984; Sheehy, Goldsmith, & Charles, 1980).

Kernberg et al. (1999) note that the impulsivity found in borderline individuals is more likely to be the result of an attempt to manage anxiety rather than an inability to control behaviour. If this is the case, impulsive acts committed by individuals with BPD may be more likely to be characterised by the emotional pathway to impulsivity described by Newman and Wallace (1993). Indeed, Newman and Wallace view this kind of impulsivity as the result of an individual's "fight response" in a situation where this is the only available alternative between "fight or flight". They suggest that anxious individuals, when involved in a conflict from which it is impossible to flee, will respond with impulsive aggression.

So far, no studies have been published that used the go/no-go discrimination task with borderline patients. Therefore, no laboratory findings are available to enlighten the mechanisms by which borderline individuals may act impulsively. Nevertheless, based on knowledge of their tendency to experience strong emotional reactions and to be involved in stormy relationships, one can infer that, in the context of interpersonal conflict, these persons may be particularly prone to commit impulsive acts of aggression. These impulsive reactions would be brought on by strong feelings of anxiety or fear, possibly related to a perception of abandonment. Further, since borderline individuals are also very prone to anger, they may, like psychopaths, present such impulsive reactions in association with feelings of anger.

Thus, both psychopathy and BPD may be related to the commission of impulsive acts due to intense emotional arousal that would interfere with their ability to pause and reflect before acting. Yet, while psychopaths are more likely to demonstrate this type of

impulsivity in combination with frustration or anger, borderline individuals would also demonstrate a similar response as a result of anxiety or fear.

Hypotheses

To summarise, the present study allowed to test eight main hypotheses about the characteristics of adolescent offenders' impulsive criminal acts, both violent and non-violent, their relationships with types of violence, with trait impulsivity and, most importantly, their relationships with levels of psychopathic and borderline personality disorder traits.

First, based on the findings reviewed above about adult offenders, it was hypothesised that the likelihood of adolescents to engage in impulsive, as opposed to premeditated, criminal acts, would be unrelated to trait impulsivity, as measured by a common self-report questionnaire (the BIS-11).

Second, the presence of BPD traits, because of the importance of impulsivity as a symptom of the disorder, was expected to be related with the commission of impulsive rather than premeditated criminal acts. The presence of psychopathic traits, however, would be independent of the commission of impulsive or planned crimes. Based on the results obtained by Dempster et al. (1996, as cited in Hart & Dempster, 1997), it was expected that crime impulsivity would be differentially associated with separate features of psychopathy.

Third, on the basis of Newman and Wallace's (1993) theory, it was hypothesised that psychopathic traits would be related to the commission of impulsive acts that are the result of a failure to switch attention to non-dominant stimuli.

Fourth, high levels of either psychopathic or borderline personality disorder traits were expected to be associated with the commission of impulsive acts of aggression that are the result of high levels of emotional arousal.

Fifth, based on the Cornell et al. (1996) results, it was hypothesised that youths who committed instrumental violent crimes would be more psychopathic than youths whose violent crimes were exclusively hostile/reactive.

Sixth, following the preliminary results obtained by Hervé et al. (1999), it was hypothesised that offenders who committed internally-motivated instrumental crimes would be more psychopathic than offenders who committed only other types of offences.

Seventh, given the importance of emotional arousal in descriptions of hostile/reactive aggression, it was hypothesised that the commission of these offences would be linked with Pathway B impulsivity (Emotional Reaction).

And, finally, the commission of impulsive instrumental offences, in contrast, were expected to be associated with either Pathway A impulsivity, in which a strong desire for an object interferes with the subject's ability to think before acting, or Pathway C impulsivity, where the individual's attention is narrowly focussed on an immediate goal, no matter how important.

Method

Participants

Thirty-one male young offenders participated in this study. Two of them were excluded from the sample due to the insufficient amount of information available from their files, for a final sample of 29 youths. Six other adolescents had been invited to participate but declined. In accordance with a commitment to confidentiality with the research participants and the requirement to protect their identity under the Young Offenders' Act, participants were assigned a code number and the list of names were kept securely in the laboratory, separate from the data. At the end of the study, all identifying information was destroyed.

At the time of the study, participants were either on remand for a pre-trial assessment regarding recent charges, or were serving a custodial sentence. They were residing at one of four institutions, including an inpatient assessment unit, two custody centres in Burnaby, BC, and a custody centre in Mission, BC.

The most important selection criterion was that the youths had undergone a psychological/psychiatric assessment at the Youth Forensic Psychological Services (YFPS) in the recent past. The files built and the reports written in the course of these assessments were the principal source of information for this study. An additional selection criterion was for the youths to have either been found guilty or to have pled guilty to all charges against them. This prevented the disclosure of information relevant to the adolescents' cases prior to their court hearings. In order to avoid any interference between the research procedure and the YFPS court assessments, participants who were on remand for such an

assessment at the time of the study were not recruited until they had completed all the testing and interviews required for that assessment. Finally, only youths who were at least 13 years old and who did not present severe psychotic symptoms at the time were invited to participate.

At the time of recruitment, participants ranged in age from 13 to 19, with an average of 16.49 years ($SD = 16.37$ months). Most of them identified themselves as Caucasian ($n = 20$), with 1 youth who identified as African, 4 as fully or partly First Nations, 2 as East Asian, and 2 as South Asian. Several of these adolescents had attended alternative schools. At the time of recruitment, they had completed the equivalent of grades 5 to 10 ($M = 8.21$; $SD = 1.20$). Conduct disorder was present (or had been diagnosed in the past) for 26 participants (89.7%), while a current or past diagnosis of ADHD was recorded in 16 cases (55.2%). Substance use disorders had been diagnosed in 17 (54.8%) of the participants.

The youths varied greatly in the extent of their involvement with the justice system. Their ages at the time they were found guilty of their first offence ranged from 12 to 17 years, ($M = 13.96$; $SD = 1.43$). Including charges for which they were undergoing a court assessment, and excluding breaches (e.g., failure to comply to probation conditions), participants had between 1 and 24 offences ($M = 6.31$, $Mdn = 6.00$, $SD = 4.82$).

Measures

Crime impulsivity.

Offenders' crimes were assessed for impulsivity using the Crime Impulsivity Coding Manual, which was designed for the present study (please see Appendix A). This

manual allowed to measure and characterise the impulsivity involved in participants' criminal acts, based on information obtained during the "Crime interview" and the file review (see the Procedure section). The author rated crime impulsivity for all subjects, and a senior undergraduate research assistant, after having practiced and received feedback on a subsample of 10 participants, rated another subsample of 8 participants for the purpose of assessing interrater reliability. At the time of these ratings, both raters were blind to all other measures.

First, an overall rating of impulsivity/planning was assigned for each crime as a whole, on a four-point scale from "mostly impulsive" (1) to "mostly planned" (4). Second, criminal acts were broken down into several actions, which were then rated on both level and type of impulsivity. Level of impulsivity for each action was rated on a 4-point scale from "very impulsive" (1) to "very planned" (4). Actions scored with 1 or 2 on impulsivity level were also classified into one of the pathway categories which best described the impulsivity involved. These categories were derived from the pathways to disinhibited behaviour proposed by Newman and Wallace (1992, 1993) and described in the introduction.

Pathway A (Strong Drive) characterised impulsive actions that were committed in response to a strong desire for some object, such as drugs, money, etc. Pathway B (Emotional Reaction) applied to impulsive actions that occurred in reaction to a threat, provocation or punishment, in situations where the subject was experiencing such high emotional arousal that it interfered with his ability to think clearly about what he is doing. In Pathway C (Deficit in Shifting Attention), the individual's desire was not as strong as in Pathway A, nor was his emotional reaction to a negative event or threat as strong as in

Pathway B. Nonetheless, this subject's attention was narrowly directed onto an immediate goal.

At the beginning of the data collection, it became apparent that a fourth pathway category was needed to more accurately characterise certain acts. In some instances, youths were committing impulsive acts in response to an immediate, unforeseen occurrence, such as the arrival of the police. These situations forced the youths to react quickly, typically with the first response that came to their mind. They were not necessarily overwhelmed by stress or fear on these occasions, nor were they still strongly driven to the object of their crime. As with pathway C, these subjects were acting on their first intent (in these cases, either to struggle or to flee). However, they were not necessarily doing so because of their own tendency to think about only one option, but in response to the nature of the circumstances which required a rapid response. Therefore, it was felt that these acts should not be included with pathway C. An additional category (Pathway D) was created to account for these acts, and was labelled Reactive Impulsivity.

Types of violence.

The presence and type of violence in each participant's crimes were rated from file and interview information using the Manual for Coding Criminal Characteristics of Violent and Non-Violent Offenders (Hervé, Petitclerc, Marxsen, & Hare, 2000). One part of this manual (see Appendix B) was used to classify offences as non-violent or violent, and to classify violent offences as hostile, reactive, or instrumental, based on Cornell's classification scheme (Cornell, 1996).

Instrumental violent offences were further categorised according to their primary goals (e.g., “material”, “social recognition”, “personal sense of power or pleasure”, “drugs”). These goals were grouped into two categories: internal and external. Internal motivations were those that were more closely related to the offender’s personality, values and intent. External motivations were those which were related to environmental conditions or to an addiction, rather than to the offender’s personality.

Coding was completed by the author ($n = 14$) and a trained undergraduate research assistant ($n = 15$). Training consisted of practice and feedback with the institutional files of adult offenders (used for a different research project) until agreement was deemed acceptable (i.e., after coding about 6 files). Unfortunately, due to limitations in time and manpower, it was impossible to double-rate a large enough subsample to assess interrater reliability after training. The research assistant was blind to all other variables while, at the time of coding, the author was blind to psychopathy and borderline personality disorder, but not to crime impulsivity.

Psychopathy.

Psychopathy assessments were completed using the Psychopathy Checklist-Youth Version (PCL-YV; Forth et al., 1994). A senior undergraduate student conducted PCL-YV assessments on all participants, while a graduate student independently rated a subsample of 8 of them, in order to assess interrater reliability. The two raters had received training in independent settings. The first rater was mainly trained in the use of the adult version of the scale, the Hare PCL-R. Training in the PCL consists of participation in workshops and practice with training cases (files and taped interviews) until total scores fall within three

points of the senior trainers' scores, for at least 10 training cases. Both raters were blind to all other measures.

Most assessments were based on both file and interview information, as recommended by the PCL-YV rating guide. However, as explained below, interviews were unavailable for 8 participants, so only files were used for these eight psychopathy assessments. The file-only method is also acceptable according to the PCL-YV rating guide, and has been used in several other studies.

The PCL-YV is a modification of the well-established Hare Psychopathy Checklist-Revised (PCL-R; Hare, 1991) used to assess psychopathy in adult offenders. The PCL-YV's 20 items are essentially the same as the PCL-R items (please see the list of PCL-YV items in Appendix C). However, the rating of some items has been modified to take into consideration adolescents' fewer opportunities for independent living, for serious intimate relationships and for the accumulation of a lengthy criminal record. Item 17 (Many short-term marital relationships) is labelled "Unstable interpersonal relationships" and includes both sexual and non-sexual relationships. The rating of items 18 (Juvenile delinquency) and 20 (Criminal versatility) is broadened to all criminal activity, including that for which the youth has never been caught.

As with the PCL-R, each PCL-YV item is scored on a three-point scale from 0 to 2, based on whether the item does not apply to the individual (0), applies somewhat to the individual (1), or definitely applies to the individual (2). Individual item scores are added to yield the total score, which can range from 0 to 40, with higher scores reflecting a closer match to the prototypical psychopath. Although both the dimensional and categorical approaches to psychopathy have been used in research with adults, for the purpose of this

study, it was deemed most appropriate to use PCL-YV scores dimensionally. Indeed, there has been no research addressing the validity of different cut-off scores on the PCL-YV. In addition, this approach is more consistent with the emphasis in this study on the use of traits or symptoms to describe adolescents as it is believed to be more precise, more valuable and more ethical than the use of the label “psychopath”, especially until more is known about the course of psychopathy from adolescence to adulthood.

The use of adolescent versions of the PCL-R (i.e., the PCL-YV and earlier versions, such as the 18-item scale used by Forth, Hart, & Hare, 1990) is supported by a growing body of research showing their reliability and validity in the study of psychopathy with adolescent offenders. These scales have shown high interrater reliability and good internal consistency (Brandt et al., 1997; Forth et al., 1990; McBride, 1998). They have also revealed a pattern of association with other variables, such as violent recidivism (Brandt et al., 1997; Forth et al., 1990), substance use (Mailloux, Forth, & Kroner, 1997) and demographic characteristics (Forth et al., 1990), that parallels the pattern obtained with the PCL-R in adult offender populations.

A few studies have tested the applicability of the traditional two-factor structure of psychopathy to the PCL-YV. Results from these studies showed that the PCL-R-derived two-factor structure provides a reasonable fit to the data obtained with the PCL-YV. However, there exist some differences in the exact item composition of these factors, and the two factors correlate very highly with each other (Brandt et al., 1997; Cruise, Rogers, Newmann, & Sewell, 1999). Further, little research has been conducted so far using this factor structure with adolescents. The model of psychopathy recently obtained by Cooke and Michie (2001), with its distinction between three factors representing psychopaths' 1)

Arrogant and deceitful interpersonal style, 2) Deficient affective experience, and 3) Impulsive and irresponsible behavioural style, is well suited to the current research. Indeed, unlike the original two-factor structure of the PCL-R, which combines impulsivity and irresponsibility with antisocial behaviour, this model allows the separation of these two aspects. Therefore, in this project, this newly developed three-factor model was used rather than the more traditional two-factor structure.

Borderline personality disorder.

Borderline personality disorder (BPD) traits were assessed with the criteria and scoring instructions of the Revised Diagnostic Interview for Borderlines (DIB-R; Gunderson & Zanarini, 1992). All DIB-R assessments were conducted by a senior undergraduate student who was blind to all other measures. This student had received feedback on her first two assessments by a senior graduate student who studies borderline personality disorder in forensic populations. A subsample of 8 participants were double-rated by the author who, at the time of these assessments, was not blind to the other measures.

The DIB-R is an interview protocol which comprises a number of questions associated with 22 statements (e.g., “the patient has had a pattern of physical self-mutilation”; please see the list of statements in Appendix D). Typically, the assessor rates these statements on a three-point scale, from 0 to 2, based on the answers provided by the patient during the interview. However, in this study, assessors used both file and interview information to rate the 22 statements, and referred to the DIB-R interview questions to understand the flavour of each statement. This use of the DIB-R was thought to allow a

more complete assessment of borderline personality traits, since it would not rely entirely on self-report information. This method of assessment was also thought to be more readily comparable to the method used to assess psychopathic traits. The 8 participants whose interviews were unavailable were assessed on BPD based on file reviews only.

All remaining scoring procedures followed those prescribed by the authors of the DIB-R. The 22 statements were rated according to the patient's functioning for the past two years. These statements were then used to score the four DIB-R sections: affect, cognition, impulse action patterns, and interpersonal relationships. Scores on the four sections were scaled and summed to yield a total score ranging from 0 to 10, with higher scores indicating a higher level of borderline personality disorder traits.

The authors of the DIB-R recommend that scores of 8 to 10 on this instrument be used to diagnose BDP in adults (Gunderson & Zanarini, 1992). As there has been limited research on the use of the DIB-R with adolescent offenders, it was felt that the use of a cut-off score would be inappropriate, and the DIB-R scores were used dimensionally. The use of a dimensional approach for both psychopathy and borderline assessment would also allow more logical comparisons between the two types of scores.

Although no psychometric data are available on the use of the DIB-R with adolescent offenders, the original version of the instrument (the DIB; Gunderson, et al., 1981) has shown good interrater reliability when used with adolescent inpatients (McManus, Lerner, Robbins, & Barbour, 1984) and has been used for the assessment of BPD in studies of adolescent offenders (e.g., McManus, Brickman, et al., 1984).

Trait impulsivity.

Trait impulsivity was measured with the most recent version of the Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995). The BIS was originally created for use with adults, but has now been used with subjects aged 12 and over (Zaparniuk & Taylor, 1997). The BIS-11 is a 30-item self-report questionnaire, which was adapted from the BIS-10 to improve its factor structure. The BIS-11 items are rated on a four-point scale from "rarely/never" (1) to "almost always/always" (4). The new scale differs from its previous version only by the removal of four items (Patton et al., 1995). In this study, as in the Patton et al. study, participants completed the 34-item BIS-10 questionnaire, from which the BIS-11 total score was obtained.

Version 10 of the BIS was designed to fit a three-factor model of trait impulsiveness, composed of motor impulsiveness, cognitive impulsiveness and non-planning impulsiveness. Therefore, it offers a broader assessment of impulsivity than do other commonly used self-report measures such as the Eysenck I.7, which mainly assesses motor impulsiveness (Luengo, Carrillo-de-la-Peña, & Otero, 1991; see also Zaparniuk, & Taylor, 1997).

The BIS has been used with forensic populations (see Barratt, 1994), including adolescent offenders (Barratt, 1981), but unfortunately the psychometric properties of the scale in these samples are not available. In a study using a Spanish translation of the BIS-10 with undergraduate students, Luengo et al. (1991) found a one-year test-retest reliability of .60, and internal consistency of .56 and .65 for each of two samples. Impulsivity as assessed by the BIS-10 was moderately associated with self-reported antisocial behaviour among non-institutionalised adolescents (Luengo et al., 1994), and differentiated between

patients diagnosed with antisocial personality disorder and other psychiatric patients (see Barratt, 1985). In another study, however, the BIS (earlier version) did not differentiate between adolescent delinquents and psychiatric patients (Barratt, 1981).

Procedure

Participants who satisfied the selection criteria described above were approached by the author, who gave them an overview of what the study involved (i.e., two interviews, researchers' access to YFPS files, limits to confidentiality, etc.). Adolescents who accepted to participate also signed a written assent form which detailed the information given to them orally (please see the Assent form in Appendix E). Guardian consent was obtained through the approval of the project by all institutions involved.

Interview session I.

After giving written assent to participate, adolescents took part in the "Crime interview". With their agreement, this interview (and the second one) was tape-recorded, in order to facilitate assessments by different individuals. Most youths completed the BIS-10 questionnaire after this interview. However, due to scheduling difficulties, some participants completed the questionnaire after the second interview, while 2 did not complete it at all. Most participants completed the BIS-10 by themselves, while about a fifth of them, due to their difficulty reading, preferred to have the experimenter enunciate the questions and record their answers.

The crime interview was based on the Step-Wise Interview protocol, which comprises a free recall of an event, followed by open-ended, and then more specific

questions (see, e.g., Yuille, Hunter, Joffe, & Zaparniuk, 1993). The interviewer (the author) has been trained in this protocol. Training involves familiarisation with the principles behind the method, and supervised (videotaped) practice with different interviewees. In the present study, the purpose of the interview was to obtain a detailed description of as many as three crimes (two violent crimes and one non-violent crime, when possible). After the free recall, the interviewer would ask more direct questions about when the youth had first thought about committing the offence, how he was feeling at the time, etc. This information was used to assess the degree to which each action was planned or impulsive, and to classify impulsive actions into the appropriate pathway categories. The interview information was also used for coding violence motivation.

Interview session II.

In the second session, participants were involved in the "Personality interview". This interview was conducted by one of four senior undergraduate research assistants who had also been trained in the Step-Wise interview technique and had familiarised themselves with the specific interview protocol used for this study. The two sessions were conducted on two different days to minimise participants' fatigue and maximise their concentration ability. For scheduling reasons, however, 1 youth participated in the entire study on one day, with a break between the two interview sessions. At the time of their second interview, participants were offered a chocolate bar and a soft drink as a reward for participating.

The information obtained from the personality interview was used for personality disorder assessments (psychopathy and BPD). This interview covered the participant's

school and work history, family life, mental health history, antisocial behaviour and interpersonal relationships. The topics covered and the open-ended format of the questions allowed to assess both psychopathic and borderline personality traits. The interview protocol mainly consisted of the standard interview for use with the Hare PCL-R, with the integration of questions from the DIB-R, the SCID-II, and other questions that were thought to be of assistance in assessing borderline traits (see Appendix F). The questions were adapted to reflect youths' life experiences.

Unfortunately, 7 participants did not go through the second interview, because they had been released or transferred to a different institution ($n = 4$), or no longer wanted to participate ($n = 3$). Technical difficulties prevented the recording of the interview conducted with one other participant. As a result, only file information was used to complete personality assessments for these 8 offenders. While the combination of file and interview information was ideal, the files contained considerable information and were deemed sufficient for the PCL-YV and DIB-R assessments.

File review.

The review of participants' institutional files was conducted onsite at YFPS to ensure that no identifying information would leave the institution. The files were rich with information from a variety of sources. First, they contained nursing observations, which were recorded several times a day for the duration of youths' stay at the inpatient unit (usually 1 or 2 weeks). Second, they included police information such as witnesses' statements, arrest reports, investigation reports, etc. Third, files contained the notes and reports written by a social worker, who integrated information gathered from family

members, school teachers and therapists. Finally, the files contained reports of the psychiatrist and/or psychologist in charge of the court assessment, as well as their notes from interviews with the youths.

Results

Preliminary Analyses : Distribution of Scores, Reliability of the Measures, and Associations with Possible Confounding Variables.

Crime Impulsivity : Level of impulsivity

Participants were asked to describe three crimes for which they had been charged, two of which would be violent, and one of which would be non-violent. Most participants were able to provide descriptions of three crimes ($\underline{n} = 17$). Some youths described two crimes ($\underline{n} = 9$), or only one ($\underline{n} = 3$), usually because they had not been charged for more or, in rare instances, because they could not remember more or wanted to end the interview. Based on file information, it was verified that all offenders who had been charged for at least one violent crime had described at least one, and that only 1 offender had been charged for more than one violent crime described only one. Violent crimes were defined as those committed against a person, and included uttering threats, robbery, assault, manslaughter, etc. When youths were convicted of a non-violent offence for an incident during which they had resorted to violence (e.g., a robbery which had been plea bargained down to a theft conviction), the crime was considered violent. Of the 72 crimes described, 40 were violent. They were committed by 22 participants.

The 72 crimes described spanned the whole range of impulsivity/planning from very impulsive crimes (with a score of 1) to crimes with important planning (with a score of 4). Nevertheless, the majority (75%) were more impulsive than planned (see Figure 1).

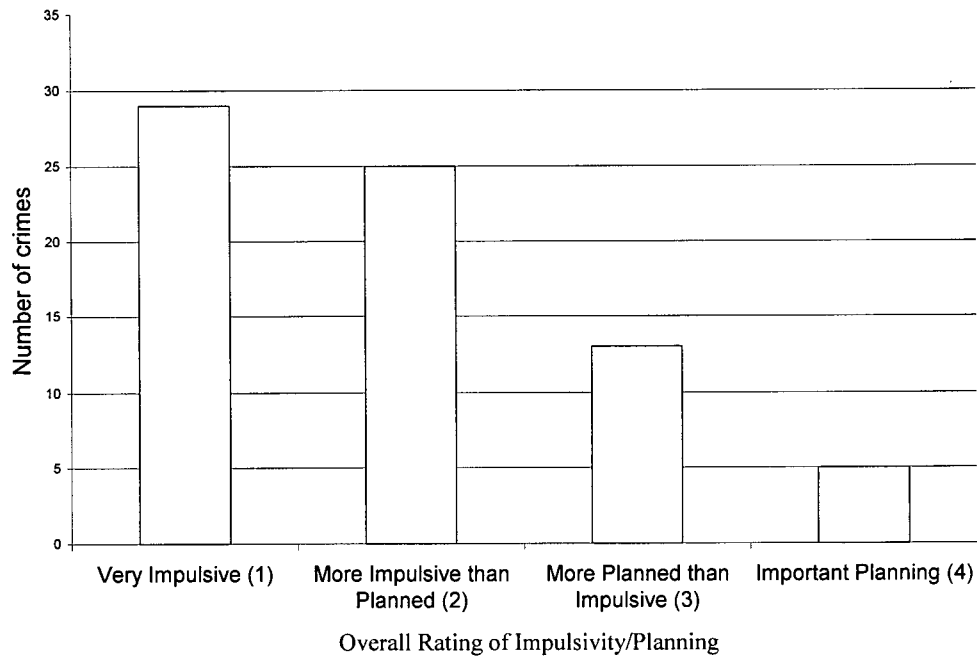


Figure 1. Distribution of the 72 crimes on overall impulsivity/planning.

For each individual, a global crime impulsivity/planning score was calculated by averaging the ratings assigned to all his crimes. Interrater reliability on these global scores was evaluated by computing intraclass correlation coefficients (ICC; Shrout & Fleiss, 1979) for a subset of 8 participants with double ratings. The ICC were .72 for a single rating and .84 for the average of two ratings. Only the first rater's scores were used for the subsequent analyses. Global crime impulsivity/planning scores ranged from 1 to 3.5 (higher scores indicating more planning), with a mean of 1.93 ($SD = .65$)¹. These global scores were used as the index of crime impulsivity. In addition, a crime impulsivity/planning score was calculated for violent crimes only. These scores ranged

¹ Unless otherwise specified, all statistical analyses were performed with $N = 29$ participants.

from 1 to 4.0, with a mean of 1.70 ($SD = .86$, $n = 22$). They were used as the index of violent crime impulsivity.

Crime Impulsivity : Pathways to impulsive behaviour

The types of impulsivity observed in youths' criminal activities were first analysed with all crimes described. Then, to explore more specifically the types of impulsivity associated with violent criminal acts, similar analyses were performed on violent crimes only.

Two scores were derived from the ratings given to all crime actions, and were used to describe participants on how each pathway did or did not characterise their impulsive behaviour. First, offenders were assigned a dichotomous score on each pathway, based on whether it was absent (0) or present (1) during any of their crimes. Given that participants varied in the number of crimes they described (from one to three crime(s)), they differed on the probability to qualify for each pathway. This was taken into consideration in the analyses of variance by introducing the number of crimes coded for each individual as a covariate. For the analyses restricted on violent crimes, the number of violent crimes coded was used as the covariate.

The second score was an indication of the importance of each kind of impulsivity in offenders' crimes. It consisted of the total number of actions characterised by each pathway. Again, there was variation in the number of actions rated for each individual, due to differences in the number of crimes coded, the nature and duration of each crime, and the varying levels of detail provided by different participants. Thus, to reduce the potential bias introduced by these differences, the number of actions coded was partialled out in the

correlational analyses. The number of violent actions coded was partialled out in the analyses restricted to violent crimes.

Thus, each offender received at least two scores on each of the four pathways to impulsive behaviour: 1) a score indicating the presence or absence of each pathway over the course of all the crimes he described, and 2) a score indicating the extent to which the pathway was involved at any point during any of his crimes. Offenders who reported at least one violent crime ($n = 22$) received another set of these two scores on each pathway, for violent crimes only.

Interrater reliability on the pathway ratings was estimated by comparing the scores obtained from two independent raters with 8 subjects. Kappa coefficients were used to assess interrater reliability on the dichotomous scores for each pathway. Unfortunately, for Pathways A (Strong Drive) and C (Deficit in Shifting Attention), the Kappa coefficients could not be computed because only one subject was rated positively on Pathway A (and by only one rater), and no subjects were rated negatively on Pathway C by either rater. Kappa values were .71 ($p < .05$) and .75 ($p < .05$) for Pathways B (Emotional Reaction) and D (Reactive Impulsivity), respectively.

Intraclass correlation coefficients were computed with the second pathway scores (number of actions) given to the 8 participants whose crimes were double rated. Again, due to the low base rate of Pathway A impulsivity in this subsample, the ICC were not calculated for this pathway. ICCs were .47 and .64 for Pathway B, .73 and .84 for Pathway C, and .87 and .93 for Pathway D, for single ratings and the average of two ratings, respectively. Despite limitations on the possibility to fully test interrater reliability, these

data were interpreted as suggesting a reasonable level of agreement among raters. Only the scores obtained by the first rater were used in the analyses.

The pathway to impulsive behaviour most commonly observed in the course of participants' criminal acts was Pathway C ($n = 25$). Pathways A, B and D were noted throughout the crimes of 7, 13 and 18 participants, respectively. Among the 22 youths who described violent offences, Pathway C was also the most common ($n = 17$), while Pathways A, B and D were involved in the violent crimes of 5, 12, and 10 of them, respectively.

Table 1 presents the distribution of the number of actions characterised by each of the four pathways to impulsivity.

Table 1.

Mean (and Standard Deviation) Number of Crime Actions Characterised by each Pathway to Impulsive Behaviour, for all Crimes Combined (N = 29) and for Violent Crimes Only (n = 22).

Pathway		Mean Number of Actions (<u>SD</u>)	
		All crimes combined	Violent crimes only
A	Strong Drive	1.90 (4.74)	1.14 (2.71)
B	Emotional Reaction	2.10 (3.37)	2.59 (3.65)
C	Deficit in Shifting Attention	5.76 (5.53)	4.00 (4.09)
D	Reactive Impulsivity	2.38 (3.11)	1.18 (2.30)

Types of Aggression

Violent crimes were classified under 11 possible motivations (see Table 2).

Table 2.

Number (%) of Violent Crimes in Each of the 11 Violence Categories.

Type of Violence		Number of Crimes (%)
1	Hostile_____	1 (2.5%)
2	Reactive_____	15 (37.5%)
3	Instrumental	
	a. Internally motivated	
	i. Material_____	6 (15%)
	ii. Social Recognition_____	4 (10%)
	iii. Personal Sense of Power/Pleasure_____	9 (22.5%)
	iv. Sexual Gratification_____	0 (0%)
	v. Getting Away with Crime_____	1 (2.5%)
	b. Externally motivated	
	i. Material_____	3 (7.5%)
	ii. Drugs_____	1 (2.5%)
	iii. Sexual Gratification_____	0 (0%)
	iv. Self/Other Protection_____	0 (0%)
Total		40 (100%)

Given the small number of crimes in some categories, the following types of crimes were combined: Hostile and reactive crimes formed one category; all externally motivated

instrumental crimes formed a second category; internally motivated instrumental crimes committed for material gain or to get away with a crime formed a third category; and internally motivated instrumental crimes committed for social recognition or personal sense of power formed a fourth category.

For analyses on categories of offenders, youths were classified in the same way as in Cornell et al.'s (1996) study. More than half of the participants who described violent crimes were found to engage in hostile/reactive violence at least once ($n = 12$). This type of violence was most often (13 out of 16 crimes) associated with anger or frustration. Offenders who described only hostile/reactive violence were placed in the first category (Hostile/Reactive, $n = 7$). Those who described at least one instrumental violent crime, regardless of the presence of hostile/reactive violence, were placed in the second category (Instrumental, $n = 15$). Finally, offenders who had not committed any violent offence formed the Non-Violent category ($n = 7$).

Psychopathy

A subsample of 8 (25.8%) participants were assessed on the PCL-YV by two raters. Intraclass correlation coefficients were .74 for a single rating and .85 for the average of two ratings. Only the first rater's scores were used for the subsequent analyses.

Scores on the PCL-YV ranged from 10 to 34 with a mean of 24.76 ($SD = 5.74$). These scores are comparable with those obtained in other similar samples (e.g., Brandt et al., 1997; Forth et al., 1990). Psychopathy was unrelated to age, $r = -.25$, ns, or number of convictions, $r = .17$, ns. However, it was positively correlated with the number of violent crimes described, $r = .34$, $p < .05$.

Level of intelligence was estimated with the latest documented results on an IQ test such as the WISC III. These results were available for 26 youths. Total scores were described as “below average”, “low average”, “average”, “high average”, “above average”, and “significant difference between verbal and performance scores”. Among those whose scores could be described as a whole (i.e., no significant difference between the two subtest scores), there was a significant negative correlation between psychopathy and category level of intelligence, $r = -.42$, $p = .05$, $n = 22$.

Scores on each of the three factors described by Cooke and Michie (2001) were calculated (see Table 3). Interrater agreement was high for the first two factors, ICCs = .76 and .86 for Factor 1, and ICCs = .80 and .89 for Factor 2. However, the agreement was poor for the third factor, ICCs = .40 for a single rating, and .58 for the average of two ratings.

Table 3.

Distribution of Factor Scores on the PCL-YV, Based on Cooke & Michie's (2001) Three-Factor Model.

Factor	Possible Range	Observed Range	<u>M</u>	<u>SD</u>
1 Arrogant and deceitful interpersonal style (PCL-YV items 1, 2, 4, 5)	0-8	1-8	4.62	1.95
2 Deficient affective experience (PCL-YV items 6, 7, 8, 16)	0-8	0-8	4.41	2.40
3 Impulsive and irresponsible behavioural style (PCL-YV items 3, 9, 13, 14, 15)	0-10	1-10	7.24	1.99

Borderline Personality Disorder

Interrater reliability on borderline personality disorder assessments was evaluated with intraclass correlation coefficient for a subsample of 8 participants with double ratings on the DIB-R. The ICC were .70 for a single rating and .83 for the average of two ratings. Only the first rater's scores were used in the following statistical analyses. DIB-R scores ranged from 0 to 8, with an average of 3.41 ($SD = 1.74$). Borderline personality disorder was unrelated to age, $r = .32$, ns, level of intelligence, $r = -.22$, ns, $n = 22$, or number of convictions, $r = .24$, ns. Scores on the DIB-R were not significantly correlated with scores on the PCL-YV, $r = .16$, ns, suggesting that there was no substantial comorbidity of the two disorders in this sample.

Scores and scaled scores on the four DIB-R sections were calculated. Interrater agreement was high for the Affect section scores, $ICC = .79$ for a single rating and .88 for the average of two ratings, and for the Interpersonal Relationships section scores, $ICC = .95$ for a single rating and .98 for the average of two ratings. However, interrater agreement was null on the Impulse Action Patterns section scores, $ICC = 0$, for a single rating and for the average of two ratings. ICCs could not be computed for the Cognition section scores, as there was no variance among the ratings for this subsample of participants.

When ICCs were calculated on the scaled scores of each section, interrater agreement was even lower. ICCs for single rating and the average of two ratings were .26 and .41 for the Affect scaled scores, not computed (no variance) for the Cognition scaled scores, .28 and .44 for the Impulse Action Patterns scaled scores, and not computed (no variance) for the Interpersonal Relationships scaled scores. Thus, hypothesis-testing analyses on the DIB-R sections were conducted only on the section scores, and should be

regarded with caution in light of the poor interrater reliability. The distribution of scores (from rater one) on the four scales of the DIB-R is presented in Table 4.

Table 4.

Distribution of Section Scores on the DIB-R, N = 29.

DIB-R section		Possible Range	Observed Range	<u>M</u>	<u>SD</u>
1	Affect section	0-10	1-8	3.66	1.91
2	Cognition section	0-6	0-3	.52	.78
3	Impulse Action Patterns section	0-10	1-10	5.79	1.82
4	Interpersonal relationship section	0-18	0-7	2.45	2.25

Trait impulsivity

Trait impulsivity was measured with the Barratt Impulsiveness Scale – Version 11 (BIS-11). Missing responses on some participants' questionnaires were replaced by the sample's average score on the item. The internal consistency of the BIS-11 in this sample was good, Cronbach's $\alpha = .83$. Total BIS-11 scores ranged from 43 to 98, with a mean of 75.88 (SD = 12.35, n = 27²). These results are similar to those obtained by Patton et al. (1995; Cronbach's $\alpha = .80$, M = 76.30, SD = 11.86) with a sample of 73 adult incarcerated male offenders.

Hypothesis-Testing Analyses

Prior to performing all tests on means (t-tests and ANOVAs), the assumption of homogeneity of variances was verified with Levene's test. None of the significant results presented in this section had heterogeneous variances.

Trait Impulsivity and Crime

As predicted, participants' BIS-11 scores were unrelated to their crime impulsivity scores with all crimes combined, $r = -.29$, ns, $n = 27$, nor when only violent crimes were considered, $r = -.07$, ns, $n = 20$.

There was no significant correlation between adolescents' trait impulsivity and the number of convictions on their records (excluding breaches), $r = .33$, ns, $n = 27$. Violent offenders did not score differently on trait impulsivity than non-violent offenders, $t(25) = -1.05$, ns, $n = 27$.

Crime Impulsivity (Level of Impulsivity) and Psychopathy.

A Pearson r correlation coefficient was computed to measure the relationship between psychopathic traits, as assessed by the PCL-YV, and crime impulsivity/planning. There was no association between psychopathy and crime impulsivity, neither when all crimes were considered, $r = -.36$, ns, nor when analyses were restricted to violent crimes, $r = .00$, ns, $n = 22$.

² Two participants did not complete the BIS-11 (see Method section).

Follow-up correlational analyses were conducted with each of the three PCL-YV factors, with the other two factors partialled out. None of the correlation coefficients, with all crimes combined nor with violent crimes only, were statistically significant.

Crime Impulsivity (Level of Impulsivity) and Borderline Personality Disorder.

Borderline personality disorder traits, as assessed with the DIB-R, were found to be unrelated to crime impulsivity, neither with all crimes combined, $r = -.19$, ns, nor with violent crimes only, $r = -.18$, ns, $n = 22$.

Follow-up correlational analyses were conducted with each of the four DIB-R sections, with the other three sections partialled out. None of the correlation coefficients, with all crimes combined nor with violent crimes only, were statistically significant.

Pathways to Impulsive Criminal Behaviour and Psychopathy

Presence/absence of each pathway.

Table 5 presents the mean PCL-YV scores for adolescents who did and did not describe each type of impulsive criminal behaviour. Analyses of covariance were used to compare the means while controlling for the number of crimes coded. None of the mean differences, for all crimes combined or with violent crimes only, were statistically significant.

Follow-up analyses were conducted with each PCL-YV factor as the dependent variable and the other two factors as covariates. None of the differences were statistically significant, neither with all crimes combined nor with violent crimes only.

Table 5.

Mean (SD) Scores on the PCL-YV for Adolescents Who Did and Did Not Describe Each Pathway of Impulsive Criminal Behaviour, for All Crimes Combined, N = 29, and for Violent Crimes Only, n = 22.

	All crimes combined		Violent crimes only	
Impulsivity Pathway	Present	Absent	Present	Absent
A: Strong Drive	23.14 (6.96)	25.27 (5.38)	23.80 (6.53)	26.65 (3.90)
B: Emotional Reaction	26.92 (4.68)	23.00 (6.06)	27.25 (4.73)	24.50 (4.20)
C: Deficit in Shifting Attention	25.28 (5.50)	21.50 (7.00)	25.71 (4.33)	27.00 (5.92)
D: Reactive Impulsivity	24.89 (5.54)	24.55 (6.33)	25.70 (4.92)	26.25 (4.54)

Importance of each pathway.

Partial correlations coefficients were computed to investigate the relationships between psychopathy and the extent to which each pathway to impulsive behaviour was involved in the adolescents' crimes, while controlling for the number of actions coded. Results of these analyses are presented in Table 6.

High levels of psychopathic traits were significantly associated with Pathway B impulsivity for all crimes combined, $r(26) = .44$, $p < .05$, and for violent crimes only, $r(19) = .46$, $p < .05$. Since the same information that is used to rate Pathway B impulsive behaviour is likely to contribute to scoring item 10 of the PCL-YV (Poor anger controls), the partial correlations were computed again with item 10 kept constant, to reduce the bias

introduced by this PCL-YV item. The new correlation coefficients were $\underline{pr}(25) = .38$, $p < .05$ for all crimes combined and $\underline{pr}(18) = .44$, $p = .052$ for violent crimes only.

Table 6.

Correlations Between PCL-YV Scores and the Number of Times Each Pathway to Impulsive Behaviour Was Observed in the Course of Participants' Crimes, with the Number of Actions Coded Partialled Out.

Pathway	All crimes combined ¹	Violent crimes only ²
A Strong Drive	$\underline{pr} = -.37$	$\underline{pr} = -.06$
B Emotional Reaction	$\underline{pr} = .44^*$	$\underline{pr} = .46^*$
C Deficit in Shifting Attention	$\underline{pr} = .31$	$\underline{pr} = -.02$
D Reactive Impulsivity	$\underline{pr} = -.14$	$\underline{pr} = -.29$

¹ $\underline{N} = 29$, $\underline{df} = 26$ for partial correlations on all crimes combined

² $\underline{n} = 22$, $\underline{df} = 19$ for partial correlations on violent crimes only

* $p < .05$

Follow-up analyses were conducted to discern more specifically the components of psychopathy that were related or unrelated with each pathway. Partial correlations were computed with each PCL-YV factor, with the other factors partialled out. None of the correlation coefficients computed with all crimes combined, nor those computed with violent crimes only, reached statistical significance.

Pathways to Impulsive Criminal Behaviour and Borderline Personality Disorder

Presence/absence of each pathway.

Table 7 presents the mean DIB-R scores for offenders who did and did not display each pathway to impulsive behaviour in the crimes described. Offenders who demonstrated Pathway B (Emotional Reaction) impulsivity in the course of any of their crimes had significantly higher DIB-R scores than offenders who did not, $F(1) = 5.74$, $p < .025$. Other comparisons on borderline personality disorder for all crimes combined did not reach statistical significance. When the analyses were restricted to violent crimes, none of the relationships reached statistical significance.

Table 7.

Mean (SD) Scores on the DIB-R for Adolescents Who Did and Did Not Describe Each Pathway of Impulsive Criminal Behaviour, for All Crimes Combined, N = 29, and for Violent Crimes Only, n = 22.

Impulsivity Pathway	All crimes combined		Violent crimes only	
	Present	Absent	Present	Absent
A: Strong Drive	4.43 (2.07)	3.09 (1.54)	3.60 (1.52)	3.53 (1.77)
B: Emotional Reaction	4.23 (1.96)	2.75 (1.24)	4.08 (1.98)	2.90 (.99)
C: Deficit in Shifting Attention	3.24 (1.81)	4.50 (.58)	3.53 (1.84)	3.60 (1.14)
D: Reactive Impulsivity	3.83 (1.82)	2.73 (1.42)	3.50 (1.65)	3.58 (1.78)

Follow-up analyses were conducted with each DIB-R section score as the dependent variable, and the three remaining section scores as covariates. None of the mean differences, with all crimes combined nor with violent crimes only, were statistically significant.

Importance of each pathway.

Partial correlation coefficients were computed to investigate the relationships between borderline personality disorder and the extent to which each pathway to impulsive behaviour was involved in the adolescents' crimes, while controlling for the number of actions coded. None of the relationships reached statistical significance (see Table 8).

Table 8.

Correlations Between DIB-R Scores and the Number of Times Each Pathway Was Observed in Participants' Crimes, With the Number of Actions Coded Partialled Out.

Pathway	All crimes combined ¹	Violent crimes only ²
A Strong Drive	$\underline{pr} = .23$	$\underline{pr} = .03$
B Emotional Reaction	$\underline{pr} = .24$	$\underline{pr} = .18$
C Deficit in Shifting Attention	$\underline{pr} = -.21$	$\underline{pr} = .03$
D Reactive Impulsivity	$\underline{pr} = .08$	$\underline{pr} = -.15$

¹N = 29, df = 26 for partial correlations on all crimes combined

²n = 22, df = 19 for partial correlations on violent crimes only

* $p < .05$

Follow-up analyses on the four section scores of the DIB-R, controlling for the remaining three sections, showed no significant relationships, with all crimes combined. When only violent crimes were considered, there was a significant relationship between Pathway D impulsivity (Reactive Impulsivity) and the Affect section of the DIB-R, $r(16) = .49, p < .05$. No other correlation coefficients reached statistical significance.

Types of Aggression and Personality Disorders

Analyses were conducted based on the categories described in the Preliminary analyses section (Hostile/reactive only, Instrumental and Non-violent). The distribution of youths in each category, as well as their mean PCL-YV and DIB-R scores, are shown in Table 9.

Table 9.

Mean (SD) Scores on the PCL-YV and the DIB-R for Adolescents in Each of the Four Violence Categories, N = 29.

Violence category	<u>n</u>	Mean Score (SD)	
		PCL-YV	DIB-R
1. Hostile/Reactive only	7	24.71 (3.09)	3.29 (1.38)
2. Instrumental	15	26.60 (5.15)	3.67 (1.84)
3. Non-Violent	7	20.86 (7.49)	3.00 (2.00)

One-way analyses of variance were used to test differences in psychopathy and borderline personality disorder between these four categories of offenders. No significant effects were obtained.

Dimensional analyses were also conducted among violent offenders only, to describe more precisely the relationships between different types of violence and the two personality disorders. The number of times a participant qualified for a given type of violence was correlated with PCL-YV and DIB-R scores, while controlling for the number of violent crimes described. The results of these partial correlations are shown in table 10.

Table 10.

Partial Correlations Between Number of Times Participants Described Violence of Each Category, and their Scores on the PCL-YV and the DIB-R, Controlling for the Number of Violent Crimes Coded, n = 22.

Type of violence	Partial correlations ¹	
	PCL-YV	DIB-R
Hostile/Reactive violence	$pr = .07$	$pr = -.03$
Instrumental – External violence	$pr = -.05$	$pr = -.22$
Instrumental – Internal (material/crime)	$pr = -.56^{**}$	$pr = -.29$
Instrumental – Internal (social/personal power)	$pr = .44^*$	$pr = .40$

¹ Df = 19 for all partial correlations

* $p < .05$

** $p < .01$

Types of Aggression and Pathways to Impulsive Behaviour

To approximate the relationships between the different types of aggression and different pathways to impulsive behaviour, Pearson chi-squares were computed. Only violent crimes were considered, $n = 22$. The presence of Pathway B impulsivity in adolescents' violent crimes was significantly related to the commission of hostile/reactive violent crimes, Chi-square = 8.82, $p < .005$. No other significant results were obtained.

Discussion

The principal objective of this research project was to measure and describe impulsive behaviour as it occurs in the course of adolescents' criminal acts. The first step of this study was to test the hypothesis that adolescents' impulsive criminal behaviour was distinct from their trait impulsivity, and to explore how this type of behaviour was related to psychopathy and borderline personality disorder, two personality disorders of which impulsivity is a major symptom.

Crime Impulsivity as a Unique Dimension of Impulsivity

Crime impulsivity was measured on a four-point scale similar to scales used in other studies (Barratt et al., 1997, Prentky & Knight, 1986). Since most offences described by the participants lay on the impulsive side of the spectrum, a reasonable amount of data was available to study impulsive criminal behaviour in detail.

As hypothesised, there was no relationship between crime impulsivity and trait impulsivity, as measured by the Barratt Impulsiveness Scale – Version 11 (BIS-11; Patton et al., 1995). This finding is in line with the body of research suggesting that impulsivity is a multidimensional construct (Carrillo-de-la-Peña et al., 1993; Milich & Kramer, 1984; Olson et al., 1999). More specifically, this finding is consistent with the results obtained by Prentky and Knight (1986) with adult sexual offenders and by Barratt et al. (1997) with adult violent offenders, showing that impulsive behaviour in violent crimes is unrelated to lifestyle or trait impulsivity. The results obtained here add to these studies in suggesting that this phenomenon is not limited to violent crimes.

There are two limitations to this interpretation. First, given the small sample and, consequently, the limited statistical power of this study, one could argue that a significant relationship might be obtained with a larger sample. However, the correlation obtained was also non-significant at the .10 alpha level. This would suggest that, even with larger samples, only a small correlation might be detected between trait impulsivity and crime impulsivity.

Second, only one measure of trait impulsivity was used in this study. Thus, before suggesting that crime impulsivity forms a distinct dimension of the impulsivity construct, further studies will be necessary that will use different types of measures, including cognitive tasks and other people's ratings of an individual's impulsivity. At present, this and the previous studies, taken together, would indicate that self-reported trait impulsivity is unrelated to impulsive criminal behaviour. Thus, the link between trait impulsivity and delinquency (Luengo et al., 1994; White et al., 1994) may be mediated by something else than impulsive individuals' involvement in criminal acts (as would suggest, for example, White et al., 1994).

In this study, crime impulsivity was compared to psychopathy and borderline personality disorder, and to the specific components of these disorders that reflect impulsivity as a symptom (Factor 3 of the PCL-YV: Impulsive and Irresponsible Lifestyle, and the Impulse Action Patterns section of the DIB-R). No significant relationships were found between these constructs. As hypothesised, the failure to find a relationship between crime impulsivity and psychopathy as a whole may be explained by the fact that, while certain aspects of the disorder would predispose to the commission of impulsive criminal acts, others would predispose to the planning of criminal acts (see Dempster et al., 1996, as

cited in Hart & Dempster, 1997). This specific pattern, however, was not supported by this study's results, since none of the PCL-YV factors were significantly related to crime impulsivity.

It must be kept in mind that the model chosen for the investigation of different facets of psychopathy, Cooke and Michie's (2001) three-factor model, has not yet been shown to apply to the PCL-YV. It was preferred to the traditional two-factor model described by Harpur et al. (1989) because of its greater theoretical appeal and its strong empirical support from studies with adults. However, until it is also applied to the construct of psychopathy in youths, it remains only an exploratory tool in this population.

It was hypothesised that adolescents with more borderline personality disorder traits would tend to commit more impulsive crimes. The results suggest that crime impulsivity is unrelated to borderline personality disorder or even to the specific section of the assessment instrument that reflects symptom impulsivity. This finding would be consistent with the idea that crime impulsivity is a unique dimension of impulsivity, distinct from other aspects of the construct. In borderline personality disorder, symptom impulsivity is mainly reflected by suicidal gestures. However, other aspects of borderlines' impulsivity, such as angry and violent outbursts and impulsive substance use, would be expected to be linked with impulsive criminal behaviour.

Perhaps the instrument used to assess borderline personality disorder traits was not appropriate for this sample. The DIB-R scores obtained in this sample had a shorter range, and were lower overall than found in other samples. While other investigators have previously used this instrument with young offenders and found a significant number of

participants who reached the cut-off score for BPD diagnosis, they also found important rates of other mental disorders in their sample (McManus, Brickman, et al., 1984).

Indeed, the content of the Revised Diagnostic Interview for Borderlines (DIB-R; Gunderson & Zanarini, 1992) clearly shows that it was created to assess psychiatric inpatients (see Appendix D). This may explain why scores on the DIB-R, especially on the Cognitive and Interpersonal Relationships sections, were lower in this study than has been found elsewhere. Low scores on the Cognitive section, which assesses quasi-psychotic symptoms, were expected with the selection procedure, which screened out youths who were experiencing severe psychiatric problems (see Method section). The Interpersonal Relationships section was more difficult to code given that very little information about intimate relationships was available in the files, and that youths were often reticent and/or unable to speak in detail about their relationships. Moreover, this section's emphasis on therapeutic relationships made it less applicable to the present sample.

For the analysis of separate components of borderline personality disorder, the four sections of the DIB-R were used. The raw section scores were used, rather than the scaled scores, because more variability is accessible with raw scores, and because higher interrater agreement was obtained with these scores. Yet, although interrater reliability was acceptable for two of the sections (Affect and Interpersonal Relationships), it was null for the Impulse Action Patterns section and could not be calculated for the Cognitive section. Therefore, results obtained with these sections, especially the last two sections, must be interpreted with caution.

Therefore, two factors, the restricted range of total DIB-R scores and the low reliability of the Impulse Action Patterns scores, may have artificially reduced the strength of the association obtained between borderline traits and crime impulsivity.

In summary, the results of this study suggest that impulsive criminal behaviour is independent of trait impulsivity and symptom impulsivity, as reflected in psychopathy and borderline personality disorder. The small sample and the limitations of the assessment instruments used in this study call for further research before crime impulsivity may be identified as a unique dimension of impulsivity, but the results of this study are consistent with previous research suggesting that this may be the case.

Pathways to Impulsivity in the Context of Criminal Behaviour

The second step of this study was to describe more specifically different mechanisms leading to impulsive criminal behaviour. For this purpose, Newman and Wallace's (1992, 1993) theory on disinhibition was imported from the laboratory and tested in the context of adolescent criminal behaviour.

This study was the first reported attempt to operationalise these pathways as they could manifest themselves in the context of criminal acts. A first test of this operationalisation consisted of the evaluation of interrater reliability. Kappa and ICC analyses suggested that agreement was good for Pathways C and D, although there was no variability for Pathway C on the dichotomous measure (present vs. absent). Results for Pathway B were good for the dichotomous measure, but were lower for the continuous measure (frequency). Agreement on Pathway A ratings could not be evaluated since, in the

subsample used for double ratings, only one subject was rated positively on this pathway, by only one rater. The reliability of the instrument remains to be more firmly established with a larger sample.

There were several important and obvious differences between the behaviours studied here and the behaviours that were the object of Newman and Wallace's studies. The physical environment, the social implications, and the emotional and motivational aspects of the situations were likely more diverse and more complex in the crimes committed by these youths than in the computer tasks completed by Newman and Wallace's participants. This observational study, compared with the laboratory experiments it was inspired by, was subjected to the typical trade-offs between experimental control and ecological validity.

Beyond these broad methodological disparities, however, was a more identifiable difference in the consequences of the impulsive actions studied. In Newman and Wallace's typical go/no-go task, participants who acted impulsively were making commission errors which, by definition, were maladaptive (i.e., they resulted in less reward or more punishment). In the context of criminal acts such as those studied here, however, impulsive behaviour was not necessarily maladaptive, especially in the eyes of the young offenders. They may have felt rewarded after having obtained a large amount of money, having beat up someone who provoked them, having experienced a "rush" out of a break and enter, etc. It is with these particularities in mind that the results of this study must be interpreted.

Pathway A: Strong Drive.

The first pathway described by Newman and Wallace (1992, 1993) was thought to reflect an individual's strong desire to obtain an object (e.g., money, drug, sex) viewed as a reward. In individuals with highly sensitive behavioural activation and non-specific activation systems (BAS and NAS; based on Gray's theory of arousal), this desire would automatically lead to an increase in arousal which would prevent these individuals to consider the potentially negative consequences of their act (Newman & Wallace, 1993). In the context of a crime, an intense desire to obtain money, drug, or sex, for example, may lead some offenders to impulsively get involved in a robbery, a break and enter, or a sexual offence.

In this study, this type of impulsive behaviour was the least common, in the contexts of both violent and non-violent crimes. Neither psychopathy nor borderline personality disorder were associated with this pathway to impulsivity. As most of these impulsive acts were committed during sexual or drug-related offences, future studies may find that sexual deviance and drug abuse problems, rather than personality disorders, are related with this pathway to impulsive criminal behaviour.

Pathway B: Emotional Reaction.

Based on Newman and Wallace's (1992, 1993) theory, the second pathway would involve negative rather than positive emotions, and would be associated with the threat of some form of punishment. According to Newman and Wallace, this process would emerge in individuals with a highly sensitive behavioural inhibition system (BIS) who, when it is impossible to avoid an aversive situation, would engage in impulsive behaviour. The

intensity of their emotions would prevent these individuals from reflecting before acting. In the context of a crime, an important interpersonal argument or a sudden fear of getting caught stealing may lead these offenders to, without thinking about it, act out their anger or commit important mistakes out of panic. In this study, Pathway B impulsive behaviour was associated with the commission of hostile/reactive violence. This is consistent with Newman and Wallace's (1992) description of how this pathway to impulsivity would apply in the context of crime.

As hypothesised, both psychopathy and borderline personality disorder were associated with this pathway to impulsive criminal behaviour. For psychopathy, part of this association could be explained by the fact that all crimes characterised by this type of impulsivity were violent, and that psychopathy was itself correlated with the commission of violent crimes. Thus, the clearest test of the link between Pathway B impulsivity and psychopathy was obtained when only violent crimes were considered. The mere presence of impulsive acts driven by an emotional reaction was not associated with higher scores on the PCL-YV. However, the frequency of such acts was significantly correlated with PCL-YV scores.

This correlation was, to a limited extent, explained by scores on item 10 of the PCL-YV (Poor anger controls). The nature of some of the crimes may have influenced both the rating of this item and the rating of Pathway B impulsivity, thus inflating the correlation between PCL-YV scores and Pathway B scores. When this item of the PCL-YV was kept constant, the size of the correlation decreased only minimally. The probability of a type 1 error increased slightly above the .05 level, as a result of the loss in degrees of freedom.

For borderline personality disorder, a significant relationship was obtained with the presence of Pathway B, but not with its frequency of occurrence. When only violent crimes were considered, however, the difference between the two groups (with and without Pathway B) fell below statistical significance. Here, as there was no relationship between the commission of violent crimes and DIB-R scores, the fact that Pathway B crimes were mostly violent would not have been entirely responsible for the association observed above.

The results suggest that some common aspects of psychopathic and borderline individuals, perhaps their proneness to anger outbursts and impulsive behaviour, may predispose them to commit similar crimes. The main differences between psychopathic and borderlines individuals, such as their self-image (inflated vs. unstable) and the functions fulfilled by their interpersonal relationships (parasitism vs. dependence), may not be reflected in their criminal behaviour. Unfortunately, when the different components of the assessment instruments were analysed, no significant findings emerged that would help clarify what aspects of the two personality disorders are most linked with this type of impulsivity.

It seems illogical to conceptualise psychopaths' impulsive behaviour as the consequence of a highly sensitive BIS, as Newman and Wallace's (1992, 1993) theory would suggest. Psychopaths have low frustration tolerance and can have rapid increases in arousal when they expect a punishment. In this sense, they may be viewed as being highly sensitive to aversive situations. What they perceive as aversive situations, obviously, would be linked to their own concept of self and others. However, their typical reaction to frustrating situations is unlikely to be a stop/inspect type of behaviour, as would follow

from the “highly sensitive BIS” explanation. Rather, in these situations, psychopathic individuals would more likely engage in “fight” responses.

Newman and Wallace (1993) posited that aggression in the context of Pathway B impulsivity would be an exceptional response to an unavoidable aversive situation. In view of psychopaths’ lack of empathy and dominant interpersonal style, however, it seems more likely that an impulsive aggressive response would be the typical consequence of these individuals’ negative emotional arousal. This interpretation would be supported by the finding that the frequency of Pathway B impulsive acts was positively correlated with psychopathy, and not with borderline personality disorder.

Pathway C: Deficit in Shifting Attention.

The third pathway proposed by Newman and Wallace (1993) is different from the other two in that the mechanism is cognitive rather than motivational. Here, the individuals’ attention would be focussed on a goal, whether it be important or not. No automatic reallocation of attention would be possible to accommodate other pieces of information until the act was completed (Newman & Wallace, 1993). The kind of emotion associated with such acts may be positive, negative or neutral. Newman (personal communication, April 7th, 2001) described it as a narrow, unidimensional decision process.

The main hypothesis derived from Newman’s work (Newman & Wallace, 1992, 1993) was that this pathway would characterise the impulsive behaviour of psychopaths. In this study, no relationship was found between PCL-YV total or factor scores and Pathway C impulsivity. This pathway was the most common pathway detected in the course of both violent and non-violent crimes. As was discussed above, the fact that these acts were not

necessarily maladaptive makes them different from the commission errors observed in Newman and Wallace's typical studies. This pathway to impulsive behaviour, in the context of adaptive behaviour, may simply reflect regular, focussed, goal-directed acts that do not require extensive reflection and preparation. Thus, future studies that focus on maladaptive criminal behaviour (perhaps behaviour that led to arrest, or to unintended harm to a victim) may obtain the expected results.

Pathway D: Reactive Impulsivity.

For the purpose of this study, a new pathway was created as a special case of Pathway C. It allowed to acknowledge the fact that some circumstances may call for immediate action, regardless of the intent of the individual. In the case of police arrival, for example, youths could act on their impulses to argue, fight or run away. Alternatively, they could remain passive, either because they took longer to decide on how to get out of the situation, or because they considered they had been caught. Pathway D was identified when offenders acted on their impulses. It appears that this distinction between Pathway C and the newly introduced Pathway D was useful, as the two pathways had different (although not statistically significant) patterns of associations with other variables.

A positive association was found between this type of impulsive behaviour and the Affect section of the DIB-R. Perhaps the lack of emotional stability and the high anxiety that are part of borderline personality disorder may predispose individuals to act rather than remain passive when surprised by unexpected situations.

Typologies of Aggression

This study failed to replicate Cornell et al.'s (1996) finding that the commission of instrumental offences was associated with psychopathic traits. In support of Herve et al.'s (1999) conclusions, it may indicate that the distinction between, on the one hand, offenders who have committed at least one act of instrumental aggression and, on the other hand, those who have not, lacks specificity.

First, as shown with the findings related to Pathway B impulsivity, impulsive aggression driven by emotions is likely to emerge in psychopathic individuals as well as in other individuals (such as borderlines). Second, instrumental aggression seems to be a very common behaviour among serious offenders.

It was only when the more specific types of aggression were evaluated individually that some significant relationships emerged. Two types of internal-instrumental aggression were related in opposite manner with psychopathy. While the use of violence for the purpose of satisfying desires for luxury was negatively correlated with psychopathy, the use of violence for pleasure or to serve one's self-image or social image was positively correlated with psychopathy. This underlines the importance of specifying the specific goal related to instrumental violent offences.

Conclusions

This study was the first attempt to use Newman and Wallace's (1993) typology of impulsive behaviour in the context of criminal acts. It was found that different pathways to impulsivity could be identified in adolescents' criminal behaviour and that they were differentially related to personality. More specifically, this study suggests that impulsive

criminal behaviour driven by strong emotions is related to psychopathic and borderline personality traits.

The use of adolescents' accounts as the principal source of information to infer the mechanisms by which they committed impulsive criminal acts, as well as to infer their motivations for engaging in violence, is an important limitation of this study. However, this approach is also the typical approach available to clinicians who work with these youths. Thus, despite its limitations, this kind of research may have some direct applicability to clinical forensic work. With larger samples and more refined measures, similar studies may prove useful for understanding more specifically the types of criminal behaviour that must be targeted in the treatment of individual young offenders.

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Appendix A: Crime Impulsivity Coding Manual

This manual describes a method to analyse in detail the events which compose criminal acts. The main focus is on planned and impulsive behaviour. The purpose of this exercise is to explore the sequence of actions within the course of a crime in terms of their impulsive or planned qualities. Also, we wish to differentiate between different processes leading to impulsive acts, of which we will then explore the associations with different types of violence and with different personality traits.

Working Definition of Impulsivity

Authors have suggested several definitions of impulsive behaviour, some of which encompass a larger range of behaviours or processes than others.

Murray (1938, as cited in Plutchik & Van Praag, 1995) defined impulsivity as the tendency to act quickly without reflection. As with Murray's definition, most definitions of impulsivity reflect the two major ideas of time and thought. Newman and Wallace (1992) explain that impulsive behaviour is characterised by "a lack of deliberate decision making (i.e., a failure to weigh pros and cons) and a concomitant lack of behavioural control (i.e., the behaviour is not clearly intentional)" (p. 96).

Other authors have also used the idea of lack of control in talking about impulsive behaviour. To the extent that lack of control is conceptualised as the absence of careful decision making prior to the act (i.e., *cognitive* control), our approach is consistent with this view. However, we would not endorse the view of impulsive acts as committed with complete lack of behavioural control, such as in the legal case of automatism (e.g., harm caused to someone else while having an epileptic seizure). Indeed, the view of impulsive acts expressed here does not require that the acts be committed without awareness or without intent.

Moreover, impulsive acts need not be irrational. If, at the time, it makes sense to engage in this act, the act is not irrational. What makes it impulsive, however, is that only the *immediate* consequences are taken into account to justify the act (Gottfredson & Hirschi, 1993), and that there is no long-term planning involved.

In summary, the concept of impulsive behaviour used in the context of this manual is the following: Impulsive acts are those that involved little time and thinking before they were carried out.

Global Rating of the Crime

I. Impulsivity Rating

Please rate each crime as a whole on how planned or impulsive it was. Consider both the amount of time spent thinking about the crime prior to committing it, and the amount of thought given to planning it.

1. Very impulsive:

The individual did not pause to think at all, he or she just *acted*.

- Time: Little time was involved between the intent to commit the criminal act and the commission of the act.
- Thought: There was no thinking involved about how to carry out the act, about the possible repercussions of this act, or about reasons for or against the act.

Examples:

- The boy was having a heated discussion with his father. He grabbed a knife that was on the kitchen counter and stabbed him.
- The subject was at a party, when an acquaintance showed up that he didn't like. He went up to the newcomer and started beating up on him.
- While browsing in a shop, the boy saw a CD he liked, grabbed it and left.

2. More impulsive than planned:

The offender had planned some elements of the crime (e.g., beating up a certain person; doing a B&E that night; going for a joy ride), but most of them were unplanned.

- Time: A few hours or less.
- Thought: There was some thinking involved, mostly about the general intent of committing the crime, but no careful thinking about the specifics of the crime.

Examples:

- After an argument with his girlfriend over the phone, the subject decided he was going to her home to beat her up. He walked to her place, asked to see her outside, and started kicking and punching her.
- The offender went out that night to find money to pay his drug debt. He thought about robbing a woman in a parking lot. He went there and waited until a suitable victim walked by, threw her to the ground and snatched her purse.

In general, opportunistic offences, when they follow the subject's usual strategy for committing this type of crime (e.g., way of approaching young girls to molest them), would fall under this category.

3. More planned than impulsive:

The event was generally planned, but some important acts were committed impulsively, or without preparation.

- Time: A few hours or more.
- Thought: The crime was generally planned, but some important element was missing (e.g., the exact location for a B&E; the specific victim to mug) or was committed impulsively due to the circumstances (e.g., attacking the owner of the house during a B&E).

Examples:

- The boy was with a group of friends drinking and smoking marijuana. They decided they were going to go rob the restaurant down the street. They decided the subject would go get the money while the others were waiting outside in the car, ready to leave. When the cashier hesitated to give the money, the subject went behind the counter, pinned him to the wall and threatened him with a knife. He then took the money himself and left.
- The boy had planned to teach his ex-girlfriend a lesson. He asked her to come meet him, and verbally and physically abused her as he had planned to. When he saw her beaten body on the ground, he impulsively decided to sexually assault her.

To differentiate between categories 2 and 3, think about the number of things the individual could have planned ahead, given the nature of the crime (e.g., assault vs. robbery, etc.). If most of the important elements were planned in advance, the event should be rated with a 3, but if only some of the important elements were planned, the event should be rated with a 2.

4. Important planning:

The event involved substantial planning, and no major act was committed impulsively.

- Time: At least a day.
- Thought: The important elements of the crime were planned and some preparation was undertaken (e.g., buying the weapon; following the victim the day before; visiting the crime scene; preparing some clothes; deciding what each accomplice will do).

Examples:

- The subject had thought for several days about how to get back at an acquaintance who ratted on him. He had planned when to go to his place so he would be alone, had borrowed his father's gun, and had thought about how to cover his face.
- The boy went to a bank to do a robbery. Everything was prepared in advance: the day before he had gone to the bank to spot the most vulnerable teller and identify the exits, he had decided what to say to intimidate the teller, and knew what he was going to wear.

Rating of Individual Actions

I. Separation of Actions

Actions should be separated grossly, based on their meaningfulness within a specific event. Actions that you would rate differently on impulsivity or on the pathways should be separated even if you would not normally separate them.

Only the subject's actions should be coded, but you may take note of other people's actions if necessary to understand the course of events (e.g., accomplices' actions, victim's actions; see example below). Note that killing is a result, not an action. In the case of a murder, you are asked to describe the actions (e.g., striking or shooting) which lead to the person's death.

The number of actions you will note will obviously depend on how much detailed information you have on the offence. Only actions you have information on should be coded, none should simply be inferred.

Example of the separation of actions.

Narrative:

The youth went into a corner store to steal cash and packs of cigarettes. He dropped a hold up note on the counter and opened his jacket to let the cashier see he had a knife. He gave a plastic bag to the cashier and told her to give him all the bills in the till and 10 packs of cigarettes. While the cashier was complying to his demand, hesitantly, the youth got impatient and went behind the counter to put the knife to the cashier's throat. He took all the cash from the till and left.

Actions:

1. Subject enters the corner store.
2. Subject puts hold up note on the counter
3. He opens his jacket to display the knife.
4. Subject gives plastic bag to the cashier and tells her to give him all the bills in the till and 10 packs of cigarettes.

(Cashier hesitantly puts money in the bag)

5. Subject goes behind the counter and puts the knife to the cashier's throat.
6. Subject takes the cash from the till.
7. Subject leaves the store.

As shown in action #6, we combine two or more actions when they occur almost simultaneously.

II. Beginning and End

Where to start coding?

Even though the interviewer may have obtained information about events related to the preparation of the crime, the first action should be the first action of the crime itself. It must be part of what constitutes the criminal behaviour. For example, entering a store in itself is not criminal, but if it is done with the purpose of robbing the place, it is considered criminal here. In contrast, if a person enters the store with the idea of buying something or just browsing and then, upon seeing a good opportunity to rob the place, decides to do it, the entrance in the store would not be considered part of the criminal act.

Similarly, the interactions with a victim prior to an assault (such as the beginning of an argument) should not be coded as part of the crime. The first action should be the subject's first threat or blow to the victim. An exception to this would be when an offender has planned to assault someone, goes up to the potential victim and provokes him or her. Other examples of the first action to code may be entering the place of the crime in a B&E or a robbery; restraining someone in a sexual or physical assault; walking up to a victim with the purpose of assaulting him, etc.

Other illegal actions taken prior to the offence, such as stealing a vehicle, a weapon, breaching from a foster home, etc., should not be coded. Acts such as looking for houses to break into, and mentions of committing other similar crimes (e.g., other acts of shoplifting that they were not caught for) during the same day should not be coded.

Where to end coding?

Coding should end at the point where the individual leaves the crime scene or, if he or she is chased by police or someone else, coding should end at the time of arrest or at the end of the chase. Generally, the individual's actions when he or she is arrested should not be coded. However, if the person commits an additional illegal act, such as threatening or hitting an officer, taking a person hostage or fleeing, these actions should be coded. Tempering with evidence (e.g., hiding a weapon, stashing the stolen property, hiding a body) should be coded only when they occur immediately following the individual's leaving of the crime scene. In general, selling stolen goods is not coded because it takes at least a few minutes to find a proper place to do so.

III. Impulsivity Rating

Please rate each action on how impulsive or planned it was using the 4-point scale below.

In contrast with the global impulsivity rating we make in section *A) I*, where a crime that was planned in some respects but not in others would receive a rating of 2 or 3, individual acts are considered on their own here. Therefore, the focus of this rating is the amount of time and thought put in planning each individual act. When evaluating how much the

subject thought about the act, examine how much he or she had prepared for this act and/or how much he or she thought about the possible consequences of the act

The questions you may ask yourself when rating individual acts are:

Was this act planned in advance? How much time was put in planning it and preparing it? How much thought was given to its consequences or to other alternatives to this act?

1-----	2-----	3-----	4-----
Very Impulsive	More Impulsive Than Planned	More Planned Than Impulsive	Very Planned

1. Very impulsive:

The act had not been thought about or prepared in advance. Before committing it, the subject did not pause to think at all, he or she just *acted*.

- Time: Little time was involved between the intent to commit the act and the commission of the act.
- Thought: There had not been any advance preparation for this act. There was no thinking involved about the possible repercussions of this act, or about reasons for or against the act.

Examples:

- When he sees a knife on the kitchen counter, the subject grabs it and stabs the person he was arguing with.
- The offender decides to sexually assault his victim when he sees her beaten body on the ground.
- The subject starts beating up on an acquaintance he did not like, after seeing him show up at a party.
- The subject gets hit and hits back immediately.
- When he sees a police officer come to his door, the boy flees through the window.

2. More impulsive than planned:

The offender had thought about this act for a short period before or during the commission of the crime. This act may have involved some preparation that was carried out quickly before or in the course of the crime.

- Time: A few minutes or less.
- Thought: There was some thinking and preparation involved, mostly about the intent to commit this act.

Examples:

- The offender pushes his girlfriend off the balcony. During the argument with her, he was thinking about doing this and had led her outside and positioned himself to do it.

- The subject grabs a man from behind to rob his money. He had seen this man go by, had thought about robbing him, and had followed him for a few minutes before he attacked him.
- The subject was having an argument with his mother. He thought about getting his father's gun in the garage. He went out to get it, came back and shot his mother.
- The offender asks the cashier to "put all the bills in the bag or I'll shoot you". On his way to commit a robbery, he had thought about what he would say.

3. More planned than impulsive:

The offender had thought about this act to a certain extent before committing the crime, but had not worked out all details of it or had not thought about it for very long.

- Time: More than a few minutes.
- Thought: The general intent to commit the act, as well as the way to do it was planned, but some important detail about the exact way to do it was decided on the spot.

Examples:

- The offender threatens the cashier with a knife, when she hesitates to give him the money. He had brought this knife to the store in case there would be any resistance. He had thought about this possibility when he left home.
- The youth assaults the victim with a baseball bat, as he had planned to do about an hour ago.
- The subject takes a gun in a house where he had planned to do a break and enter, earlier in the day. He had heard by his friend that there were guns in this house.

4. Important planning:

The act was planned and may have involved advance preparation.

- Time: At least a few hours.
- Thought: The act was thought-out in advance. The subject may have engaged in some preparatory behaviour prior to committing it.

Examples:

- The subject enters into a building where he had planned to commit a robbery the night before.
- The offender shoots the other boy who owed him money. He had been thinking about killing him all day, and had brought the gun with him to the victim's place.
- The youth ties up the owner of a house in a home invasion. He knew the person would be home, and had brought what he needed to tie him up. This was planned the day before.

IV. Rating of Pathway Category

For those acts that are judged impulsive or more impulsive than planned (i.e., rated 1 or 2), we will rate the presence of specific processes that lead to the impulsive behaviour.

Newman and Wallace (1993) have identified three pathways that can be involved in impulsive acts. They believe that each of these three pathways exists on a continuum, and that more than one pathway may be present in a given impulsive act. For the purpose of this research project, we will code each action according to the pathway that characterises it best.

The questions you may ask yourself when rating a specific impulsive act are:

Why did the individual not stop and think about the consequences of this act? Why did he act on his impulse?

Pathway A: Strong drive

The individual feels a strong desire for some object, such as drugs, money, material goods, sex, social recognition, etc., and as a result fails to stop and consider the consequences of his or her act.

Newman and Wallace (1993) explain that this kind of impulsivity originates from the person's high sensitivity to reward cues. Once the individual anticipates gratification, he or she engages in an attempt to obtain the object of desire (i.e., approach behaviour). The important arousal involved in the process contributes to directing attention toward the anticipation of the object (i.e., the reward cue). This process prevents the integration of internal or external information that would contraindicate the behaviour.

The important point to consider here is the interest of the perpetrator for the object in question. This appeal need not be a long-established one, as in the case of a drug addiction; it could also be a momentary desire (e.g., sudden desire to own an expensive pair of shoes), as long as it is a very strong one.

Pathway B: Strong emotional reaction

Here, rather than being influenced by the expectation of a reward, the person is reacting to a perceived punishment or a perceived threat of punishment (e.g., loss of intimate partner, loss of privileges, physical injury, verbal insult, etc.). The individual is so emotionally involved in the situation that he or she cannot think carefully about the consequences of the act.

According to Newman and Wallace (1993), this process is parallel to the one described in Pathway A, except for the motivational aspect (punishment cue vs. reward cue). Upon perception of potential or actual punishment, the person becomes highly emotionally aroused, his or her attention becomes focused on the negative event or threat, and he or she

acts without reflecting about the possible consequences. Barratt (1994) offers a view of what he calls “impulsive aggression” that is consistent with this idea. He remarks that “incoming stimuli are not interpreted logically” and “appear to reinforce the aggressive acts” (pp. 71-72). Although the typical emotions involved in this type of reaction are anger, frustration and rage, other negative affects, such as guilt, self-disgust and self-conflict, may serve to increase the emotional arousal (Newman, personal communication, April 7th, 2001).

The amount of arousal involved in this case is likely to appear higher than the arousal involved in the case of Pathway A. The individual may describe to have been so enraged as to not be able to think straight, or that he or she “flipped”, “went crazy”, etc.

Pathway C: Deficit in shifting attention

Here, the individual’s desire is not as strong as in Pathway A, nor is his or her emotional reaction to a negative event/threat as strong as it is in Pathway B. Nonetheless, once this subject had a goal in mind (whether it is to approach a reward or to fight off a adverse situation), his or her attention became focussed on the goal until the act was completed.

Newman and Wallace (1993) suggest that this kind of impulsive behaviour results from a deficit in switching attention to other, potentially relevant, stimuli, while engaged in goal-directed behaviour. These stimuli may be either internal (e.g., reminders from past experiences) or external (e.g., expression of fear on the victim’s face).

It may be difficult to assess whether the individual was able or unable to switch attention to other cues. In some cases, it may seem like the person did not stop and consider the consequences of the act because he or she simply did not care enough. However, to remain objective, we should focus on how much attention was focussed on the goal, and on how much arousal was involved. If, despite a low or moderate level of arousal, the individual did not have any other thoughts between the time of the whim or intent, and the time of the act, then this Pathway would be present.

In a sense, this pathway is more cognitive than motivational; it reflects a narrow and unidimensional way of thinking about the situation and making decisions (Newman, personal communication, April 7th, 2001).

****For pathway C, specify if the impulsivity of the act was “reactive” or “proactive”.**

Reactive (Pathway D): The youth made an impulsive decision to act in response to situational circumstances that required him to make this decision quickly. In other words, the reason why this act was committed without forethought is because some unexpected factor or circumstance (e.g., arrival of the police, arrival of the owner during a B&E in a house) left him with no choice to make a decision with no delay.

Proactive: The youth made an impulsive decision to act. This decision was initiated by himself and its rapidity was not required by the circumstances.

Note that a important proportion of impulsive acts are committed in reaction to a situation. The reactivity/proactivity distinction we make here is about the *impulsivity* of the act (the fact that it was committed without planning or forethought), not about the *commission* of the act itself.

Appendix B: Violence Coding Instructions

Based on:

Manual for Coding Criminal Characteristics of Violent and Non-Violent Offenders
Hugues F. Hervé (MA), Amélie Petitclerc (BA), Dave Marxsen, (MA), & Robert D. Hare
(Ph.D.), 2000

University of British Columbia

Presence of violence

Categorise the crime as violent or non-violent. Violent offences are defined as those that involved the direct physical and/or psychological harm of a human being, or the intent to harm. Indirect harm (e.g. the psychological trauma felt after having your car stolen or your home broken into) does not count as a violent offence as the actual offence did not include a victim. Violence is determined by the presence of a victim, not by the degree of force used.

Motivation for Violence

Specify if the aggression was hostile, reactive or instrumental.

Hostile Aggression: The aggression was motivated by hate. In this case, the victim was chosen, not due to personal reasons, but due to his/her association with some specific group (e.g., the offender is racist and the victim is black; the offender is sexist and the victim is a woman, etc.). An argument between the offender and the victim is not necessary to provoke such a crime. Indeed, one could argue that the emotions involved are displaced onto the victim.

Reactive aggression: The main purpose of the aggression was to harm the victim, in order to satisfy feelings of anger, or in response to real or imagined provocation. Strong emotional arousal was involved. Typically, the aggression occurred during a conflict between the offender and the victim (e.g. the offender was provoked by a man in a bar and assaulted him; the offender stabbed his wife during a heated argument with her). Although clear provocation is not necessary, the situation should be one where there is some sort of angry exchange between the offender and the victim a very short time before the offence.

Instrumental aggression: There was a purpose to the aggression beyond the harm of the victim (e.g., the offender shot a police officer who would have stopped him from completing a robbery; the aggression was a means for the offender to achieve satisfaction (sex, power); the offender used violence to obtain money).

If the aggression was instrumental, specify if the goal was internally motivated or externally motivated, and identify the specific goal within each category:

aa. Internally motivated: The motivation for the crime is related to the offender's

personality. The offender used the aggression to procure himself pleasure, a sense of power, social recognition, or something he desired to appropriate, such as money, or a woman for sexual gratification. Internally motivated goals include the following:

1. Material (money, property, drug trafficking): The offender's motivation stems not from living in poverty or in debt, but rather from a desire to possess more (e.g., The offender committed a bank robbery to fulfill his desire to procure material goods; the offender assaulted a man to rob his car and go on a ride; the aggressor was fighting for a part of the drug market, which he uses to support his luxurious lifestyle).
2. Social recognition: The offender used the aggression to build or maintain his reputation. The crime was perpetrated in public, or with the expectation that it would be known to others (e.g., The offender committed a murder as a requirement to become a member of a gang; the offender assaulted a man in order to assist another man with whom he had made an arrangement; the offender stabbed another man to show others that he is the one with the power).
3. Personal sense of power/pleasure: The aggression was perpetrated with the expectation that it would procure the offender a sense of power, dominance, pleasure (e.g., From the verbal exchanges the victim reported to have happened during the sexual assault, it is clear that the offender obtained more satisfaction from the degradation of the victim and the position of power he felt in than from the sexual act itself; the offender committed the assault because he anticipated the pleasure he would feel at seeing the expression of fear in the victim's face; the offender committed a robbery out of boredom, simply for the thrill of committing a crime).
4. Sexual gratification: Internally motivated acts committed for sexual gratification often involve opportunistic assaults (e.g. date rape). The offender decides that he wants to engage in sexual activity and, whether or not the victim consents, he does. He views the victim as a sexual object (e.g., The offender was with a prostitute. When he told her he had no money to pay her, she refused to have intercourse with him so he sexually assaulted her; the offender met a woman in a bar, brought her home and forced sexual intercourse on her; the offender sexually abused his wife for many years, using her as an object to fulfil his sexual desires, and hitting her when she did not comply to his demands).
5. Getting away with crime: The offender used the aggression as a means to avoid getting caught during the commission of a crime or getting caught for a crime he committed in the past (e.g., The offender was performing a robbery in a bank when a police officer came in. The offender shot the police officer to get away with the robbery; the offender killed a potential

witness to a crime committed a week before; the offender took a woman hostage to bargain his escape from police).

bb. Externally motivated: The purpose of the crime is unrelated to the offender's personality. Rather, it is related to environmental conditions, or to an addiction. Externally motivated goals include the following:

1. Material: The offender sees crime as the only way of supporting himself financially. He uses the money he obtains from crime to buy essential goods, rather than luxury (e.g., The offender committed a bank robbery to pay rent for his apartment; the offender robbed a grocery store to feed his family or to pay off a debt).

2. Drugs: The offender is addicted to alcohol and/or drugs and committed the crime primarily for the purpose of supporting his addiction (e.g., The offender robbed a bank in order to purchase drugs to alleviate or prevent his withdrawal symptoms).

3. Sexual gratification: The offender might have a sexual deviance such as paedophilia, or masochism. He feels that his sexual urges are out of his control (e.g., The offender sexually abused his young step-daughter for a long period of time. He feels guilty and ashamed of his behaviour but he is not able to control it; The offender has the recurrent fantasy of raping an unknown woman. One night, out of his control, he turns it into reality and sexually assaults a woman on the street).

4. Self/Other Protection: The offender committed the crime solely to protect himself or someone else (family, friend) from a real or imagined threat. The aggression is used as a protective tool. Note that the threat is indirect (i.e., the protection is associated with a distant threat, not an immediate one). Accordingly, this category does not apply to crimes committed in the course of a fight, where the offender is highly aroused and acts to defend himself from an immediate threat (this type of crime would be classified as reactive). Also note that the offender is not motivated by the social recognition that the crime may bring him. The following is an example of a crime motivated by protective factors: The offender committed a robbery not for material gain, but under the threat of something happening to himself (i.e. death and/or injury threat) if he did not pay for his drug debts.

Appendix C: List of Items on the Psychopathy Checklist-Youth Version

(PCL-YV; Forth, Kosson, & Hare, unpublished 1994 research version)

1. Glibness/superficial charm
2. Grandiose sense of self-worth
3. Need for stimulation/proneness to boredom
4. Pathological lying
5. Conning/manipulative
6. Lack of remorse or guilt
7. Shallow affect
8. Callous/lack of empathy
9. Parasitic lifestyle
10. Poor anger control
11. Impersonal sexual behavior
12. Early behavior problems
13. Lacks goals
14. Impulsivity
15. Irresponsibility
16. Failure to accept responsibility for actions
17. Unstable interpersonal relationships
18. Juvenile delinquency
19. Serious violations of conditional release
20. Criminal versatility

Appendix D:

List of 22 Statements from the Revised Diagnostic Interview for Borderlines

(DIB-R; Gunderson & Zanarini, 1992)

Affect Section

S.1 The patient has had a chronic low-grade depression or experienced one or more major depressive episodes.

S.2 The patient has had sustained feelings of helplessness, hopelessness, worthlessness, or guilt.

S.3 The patient has chronically felt angry or frequently acted in an angry manner (i.e., has often been sarcastic, argumentative, or quick-tempered).

S.4 The patient has chronically felt very anxious or suffered from frequent physical symptoms of anxiety.

S.5 The patient has experienced chronic feelings of loneliness, boredom, or emptiness.

Cognition Section

S.6 The patient has been prone to odd thinking or unusual perceptual experiences (e.g., magical thinking, recurrent illusions, depersonalization).

S.7 The patient frequently had transient, nondelusional paranoid experiences (i.e., undue suspiciousness, ideas of reference, other paranoid ideation).

S.8 The patient has repeatedly had "quasi" delusions or hallucinations.

Impulse Action Patterns Section

S.9 The patient has had a pattern of serious substance abuse.

S.10 The patient has had a pattern of sexual deviance (i.e., promiscuity or a paraphilia).

S.11 The patient has had a pattern of physical self-mutilation.

S.12 The patient has had a pattern of manipulative suicide threats, gestures, or attempts (i.e., the suicidal efforts were mainly designed to elicit a "saving" response).

S.13 The patient has had another pattern of impulsive behavior.

Interpersonal Relationships Section

S.14 The patient has typically tried to avoid being alone or felt extremely dysphoric when alone.

S.15 The patient has repeatedly experienced fears of abandonment, engulfment, or annihilation.

S.16 The patient has been strongly counterdependence OR seriously conflicted about giving and receiving care.

S.17 The patient has tended to have intense, unstable close relationships.

S.18 The patient has had recurrent problems with dependency or masochism in close relationships.

S.19 The patient has had recurrent problems with devaluation, manipulation, or sadism in close relationships.

S.20 The patient has had recurrent problems with demandingness or entitlement in close relationships.

S.21 The patient has undergone a clear-cut behavioral regression during the course of psychotherapy or psychiatric hospitalization.

S.22 The patient has been the focus of a notable countertransference reaction on an inpatient unit or in psychotherapy, or formed a "special" relationship with mental health professional.

Appendix E: Assent Form

Title of the project: Impulsivity in Young Offenders' Violent Crimes

Principal investigator: John C. Yuille, PhD, Professor in the Psychology Department, University of British Columbia (UBC).

Co-investigator: Amélie Petitcherc, BA, graduate student in the Psychology Department, University of British Columbia (UBC). Amélie Petitcherc is conducting this study for the completion of her Master's thesis at UBC, under the supervision of Dr. John C. Yuille.

Purpose and procedures:

The purpose of this study is to investigate the role of impulsivity and planning in the crimes committed by adolescents. If you wish to participate in the study, you will take part in two separate interviews and complete a paper-and-pencil questionnaire. The study should take a maximum of two and a half (2 ½) hours of your time.

If you agree to participate in this study, the interviewers and a research assistant from UBC will have access to your file at Youth Forensic Psychiatric Services. Your file will be used to obtain information about your offences and to evaluate some of your personality traits.

During one of the interviews, you will be asked to talk in detail about three (3) of the most recent crimes you have been convicted for: two (2) violent crimes and one (1) non-violent crime. During the other interview, you will be asked to talk about yourself and things like your school, family, relationships and criminal history. The interviews will be tape-recorded. Only authorised UBC lab personnel will have access to your tape-recorded interview. Nevertheless, it is important that you do not mention your own or other people's full names and that you do not give details about crimes for which you have not been convicted.

Confidentiality:

The information you will provide during the interviews and the information we will obtain from your file will be kept strictly confidential. You will be given a code number, which will serve to identify all documents associated with you. Your name will not appear on any of the documents or final reports. The list containing participants' names and their codes is kept securely in our UBC laboratory and is only available to authorised laboratory personnel. This list will be destroyed at the end of the study.

At the end of the study, the interview tapes will be transcribed and only the transcripts will be kept. The tapes will be destroyed.

All information we gather in this study will be used for research purposes only. The personnel at Youth Forensic Psychiatric Services or Burnaby Youth Secure Custody Centre will not have access to individual information.

Future use of your information:

We would like to keep the information we gather (from file, interviews, and questionnaires) for future research projects. Your name will not appear on any of those documents. We will not try to contact you for these future research projects.

Freedom to participate:

You are completely free to participate or not in this study. Your decision will have no effect on the way you are treated at Youth Forensic Psychiatric Services or Burnaby Youth Secure Custody Centre. Also, if you do agree to participate, you are free to withdraw at any time during the study or not to answer some questions if you prefer not to, with no penalty.

Compensation:

In exchange for participation in this study, we will offer you a chocolate bar and a soft drink. If you decide to withdraw after at least one (1) hour of the study, you will receive a chocolate bar.

Contact information:

If you have any questions about this procedure, you can contact Amélie Petitclerc or Dr. John C. Yuille at the University of British Columbia, at 822-6130. If you have any questions regarding your rights or treatment as a research participant, you can contact Dr. Richard Spratley, Director of the UBC Office of Research Services and Administration, at 822-8598.

If you have any questions about the study, please do not hesitate to ask the experimenter at this time.

Assent:

By signing this form, you agree to participate and you acknowledge that you have received a copy of this form.

Name of participant: _____

Signature: _____

Date: _____

Witness' signature: _____

Appendix F: Personality Interview

Interviewer: _____

Date of Interview: _____

Participant ID#: _____

DEMOGRAPHICS

Gender: _____

Age: _____

Date of birth: _____

Place of birth: _____

Education level: _____

Handedness: _____

First Language: _____

Ethnicity:

1. White (not of Hispanic origin)
2. Black (not of Hispanic origin)
3. Hispanic
4. First Nations
5. East Asian (e.g. Chinese, Korean)
6. South Asian (e.g., Pakistani, Sikh)
7. Middle Eastern (e.g., Persian, Palestinian, Israeli)
8. Other

SCHOOL ADJUSTMENT

1. How many different elementary schools did you go to? (Why did you change?)
2. How many secondary schools did you go to? (Why did you change?)
3. How far did you get in school? Are you still going to school?

(Ask the following questions for both elementary and secondary school life.)

4. How was / is your attendance in school? How young were you when you started skipping? Why did / do you skip? How often did / do you skip out?

5. What kind of grades did / do you get in school? Did you ever fail a grade? What grade? Why?
6. Did / do you like school at all? What did /do you like about it? What did / do you dislike about it? Did /do you find it boring? Any problems paying attention? Were you ever diagnosed with hyperactivity or an attention deficit? Were / are you on Ritalin?
7. How would a teacher describe you? Did you have a favourite teacher? What was your relationship with him / her like? Did a teacher ever treat you unjustly? Did you ever engage in sexual activity with a teacher? Did you view this as sexual abuse then? Do you view this as sexual abuse now?
8. Did / do you get along with other people at school? Did the other children ever pick on you? Did / do you have many close friends at school?
9. Did / do you play any sports at school? Any team sports? And did / do you excel in any of them? How were / are you getting along with coaches? Did a coach ever have a negative bias against you? Did you ever form a special relationship with a coach? How would you describe this relationship? Did it ever involve sexual activity? How long did this relationship last, and how did it end?
10. How was / is your behaviour at school? Did / do you get into fights? (How often?) Did / do you start them? How many would you say you started, percentage wise? How many would you say you won, percentage wise? Did you ever use a weapon? Did you ever hurt anybody badly? Did you ever badly get hurt?
11. Did you get in trouble for anything else at school: Drinking? Stealing? Cheating? Were you ever suspended or expelled from school? How often? How old were you?

(If no longer attending school.)

12. What happened after you dropped out / graduated? *(If dropped out.)* Why did you drop out of school?

WORK HISTORY

13. Have you ever worked? What kind of work have you done? Do most of your friends have jobs? What about your siblings?

(If the participant says he has never worked.)

14. Have you ever tried to get a job? Would you want to work? *(If tried but didn't get a job.)* Any idea why you didn't get this/these job(s)?

(If the participant says he has worked.)

15. How would your boss(es) describe you? Are you a hard worker? Are you reliable? Did you ever get in trouble at work? For what? (e.g., for being late or absent, drinking, drugs?) Did you ever get caught for drinking on the job? Ever high? Ever been fired? How often?
16. How were you getting along with your boss(es)? Did a boss ever treat you differently from other employees? How so? Did you ever engage in sexual activity with a boss? Is there a boss that you particularly dislike now? Were your feelings for him/her the same at the time?

(For all participants)

17. Has there ever been a period of time when you were not going to school or working? When? What were you doing? How did you support yourself? (Drugs, B&E's?) Did you look for work seriously?
18. Did you ever rely on friends for food, money or a place to live? Did you ever support yourself through crime? Prostitution? Fraud? Checks? Muggings? Pimping? If so, how do you think you got to that point?

CAREER GOALS

19. Is there any trade or occupation you would like to have? How long did you want to do that? What is the training required? Have you planned or prepared for this?
20. What are your long term goals? Where do you want to be in 10 years? What do you think could keep you from achieving those goals?

FINANCES

21. Do you save money? Do you have a bank account? Have you ever had student loans or a personal loan? How many? Did you pay them back?
22. Have you ever bought things impulsively, that you really couldn't afford? How often does it happen? How do you feel after doing something like this? Has it caused any problems?

FAMILY LIFE

23. Were you raised by both your natural parents? Did you live with anyone else when you were growing up (step / adoptive / foster family / group homes)? How did you come to live there? Who do you live with now?

(The following questions should be asked for each different home.)

24. What was home-life like when you were growing up?
25. How did you get along with your parents? How would you describe them? (Can you give an example?) Were they affectionate toward you? Were they any more or less affectionate towards you than towards your brothers and sisters?
26. Do your parents get along together? Do they argue a lot? Did they ever get into physical fights? Did they ever separate? How did it affect you?
27. Do you have any brothers or sisters? How did you get along with them when you were growing up? Did you have physical fights with them? How often? In what kind of situation? Do you still have these fights? What was the most serious injury or harm you caused to them? And the most serious harm you suffered?
28. Are things strict at your house? (lots of rules?) How often did you / do you break the rules (e.g. lie, run away, steal etc.)? At what age? How were / are you punished? Did your parents tend to punish you more or less than your brothers and sisters?
29. Do you think you were / are pretty good at getting what you want(ed) from your parents? What kind of things or responses did you usually try to get out of them?
30. Were you ever physically abused? Emotionally abused? Sexually abused? By who? What kind of impact do you think this had on you? Did you ever claim that you were abused?
31. Did you ever run away from home over night? How many times? How old were you the first time? Why would you do it? What would you do? How would you feel once you were away from home (proud, free, independent, scared, lost, guilty)?
32. What is your relationship like now with your family (parents and siblings)? How are they and what are they doing now?

ANTISOCIAL HISTORY

33. What did you get in trouble for when growing up (before 10 years old)?
 - i) vandalise property?
 - ii) stealing from parents? From friends? Other people?
 - iii) shoplifting?
 - iv) hurt animals for fun (did you have pets)?
 - v) beating up other kids?
 - vi) start fires?
 - vii) tell a lot of lies?

(For each activity endorsed.)

How old were you? Did you get caught? How were you punished? How did it affect you? Did it deter you? Were you doing it alone or with others? Who would initiate it?

34. When did you start doing crime? When was your earliest trouble with the police (under 10?) What for? Did you get arrested? (*If not.*) How did you manage to get out of this situation?
35. If someone gave you a very large amount of money to commit a crime, is there any crime you wouldn't do?
36. Have you ever used any aliases?
37. Did you ever have accomplices in your crimes? Who would initiate the crime or the planning of the crime?
38. Do you know why you started crime?
39. How do you feel when you are doing a crime? (nervous, excited, scared, a rush)? Do you like doing crime? How do you feel after doing a crime (satisfied, guilty, proud, scared)?
40. Do you regret committing any of your crimes? Why?
41. What kind of impact did your arrest / conviction have on your family? How do you feel about it?
42. Could you have done anything to avoid committing your offences? Have you ever tried to stop?
43. What would keep you out of crime?
44. What effect do you think your crimes had on the victim(s)? How do you feel about the effect? Have you ever contacted the victim(s)?
45. Do you sometimes feel that you are the real victim in your crimes? How so?

HEALTH

46. Do you have any serious medical problems? Are you on any medication?
47. Have you ever seen a psychiatrist or psychologist outside of here? Any diagnosis? Any treatment (psychotherapy, medication)? Have you ever been on medication to lower your sex drive?

48. Have you ever been very depressed? How often? When? Did you see a doctor, psychologist or psychiatrist? Were you ever on medication for depression?
49. When you are feeling down, can you still act as though you're feeling fine when it's necessary?
50. Do you have a lot of sudden mood changes? How long do your "bad" moods last? How often do these mood changes happen? How suddenly do your moods change? What is it like when you're in a "high"?
51. Do you have ups and downs about how you feel about yourself, how much you're worth, etc? How often? In what circumstances? When you're feeling good, do you feel that you have special powers or abilities? How long does it last?
52. Would you say you are an anxious person? Were you ever on medication for your nerves? What kinds of things or situations make you feel anxious? Do you have any irrational fears or phobias? Have you ever had panic attacks (huge anxiety attacks, with high autonomic activity)?
53. How do you react when you are under a lot of stress? Do you ever get more suspicious of other people? Do you feel especially spaced out?
54. Are you superstitious? Do often feel that your thoughts or actions will influence what will happen in a kind of magical way? Do you have strong beliefs that other people say are untrue? Have you often felt like you were unreal, or that things around you were unreal (as if you were in a dream)? Have you sometimes heard or seen things that no one else could hear or see? How often? Have you sometimes felt like someone else is controlling your thoughts? That other people can actually hear your thoughts? Have you had these experiences while you were drunk or stoned?
55. Have you often done things impulsively? What kinds of things? Having sex with people you hardly know? Unprotected sex? Driving recklessly? Uncontrollable eating? How often does it happen? How do you feel right after (satisfied or not, happy or not, guilty or not)? Has it caused any problems?
56. Have you ever tried to kill yourself or threatened to do so? How many times? Why? Were the attempts serious? What happened after? Was it ever to get attention?
57. Have you ever hurt yourself on purpose (cut, burned, or scratched yourself)? How many times? Why did you do it?
58. Do you use alcohol or drugs? What kinds? At what age did you start? How often do you do it? Why do you drink or get stoned? Do you sometimes drink or do drugs without really knowing why? Without having planned to do so? In circumstances where you think you shouldn't be doing it (e.g., at work, alone if unusual, unusual

time of the day)? Have you sometimes bought drugs when you didn't even want any?

RELATIONSHIPS

59. Who have been the important people in your life? (family, friends)
60. Do you have any close friends? How many? Is it important to you to have someone close? What makes a close friend? How do you react when someone tries to help you?
61. Have you ever been incarcerated? What was your longest incarceration? Did / do you get along with other youths in detention? How close were / are you to them? How long did it take you to get close to them?
62. What is your relationship like with staff members here (or in another forensic institution, e.g., group home)? How much do you open yourself up to the staff? Do you expect the same in return? Is there any member of the staff that you like(d) particularly? That you dislike(d)? Did you ever have any sexual relationship with a staff?
63. Do you get attached to other people? How would you describe it? How fast do you get attached? Do you tend to trust others or not? How much do you talk about your personal issues with close friends? With other people? How much do you expect in return?
64. Do your relationships with people you really care about have lots of extreme ups and downs? Tell me about them. Were there times when you thought they were everything you wanted and other times when you thought they were terrible? How many relationships were like this?
65. Have you often become frantic when you thought that someone you really cared about was going to leave you? Who? How often did it happen? What have you done? Have you threatened or pleaded with him / her?
66. Have you ever had a serious girlfriend/boyfriend? How many? When? For how long? Did you ever live with this person?

(If more than one serious intimate relationship, ask the following 4 questions for the most important of them, and ask whether it was typical of the subject's most important relationships:)

67. What makes it a serious relationship? How would you describe him/her? What did you like best about him/her? What didn't you like? Do you think you were in love with this person, or was it just a physical thing? Was he/she older or younger?

68. What type of relationship was it? Was it stable? Did you argue with him/her? Did you ever have physical fights with him/her? What was the most serious your fights ever got to? Did you or your partner ever get injured?
69. Did your girlfriend/boyfriend make you feel jealous? How so? How often? What did you do in these situations? Did someone ever accuse you of being overly jealous or possessive? What do you think about it?
70. Were you faithful in that relationship? Was your partner faithful? How did the relationship start and end? How long did it take you to get over him/her?

(For all participants)

71. Have you ever been deeply in love? With who?
72. How old were you when you had your first sexual experience? Was it with a stable boyfriend/girlfriend or a casual acquaintance? Did you use contraceptives? Was it impulsive or planned in advance?
73. How many different sexual partners have you had? How many were one night stands? Were they all consensual (i.e., not forcible)? Have you ever been in relationships with more than one person at the same time? Do you have any children?
74. Have you had sexual relationships with both guys and girls? What about age differences? Power differentials (baby sitters, employers, coaches, staff members...)?
75. Have you ever been unfaithful to your partners? How often? Did they ever find out? What did they do?

GENERAL QUESTIONS

76. How would you describe yourself as a person?
77. How do you think other people would describe you as a person?
78. In general, how do you get along with other people?
79. Do you think that the usual way you react to things or behave with people has caused you problems with anyone? At home? At school? Do people often get angry at you?

80. How do you react when people criticise you? In these situations, how long do you feel upset for? Do other people often say that you overreact or that you are overly sensitive?
81. Are you different with different people or in different situations so that you sometimes don't know who you really are? Do you feel this way a lot?
82. Were you ever physically abused outside the home? Emotionally abused? Sexually abused? By who? How do you feel about it now?
83. Do you have a bad temper? What gets you angry? What do you do when you're angry? Do you hit people or throw things? Does this happen often? What is the worst injury you've caused anyone? Do you often get so angry that you could lose control? What happens after you act out on your anger? Do you feel better? How long does it take you to calm down?
84. Have you ever done anything aside from crime that made you feel bad or sorry for what you had done? Why did you feel bad? What did you do then?
85. Do you tend to feel guilty in general, about things you have or haven't done?
86. Do you find that you often have to lie or to twist the reality in order to get what you want? With who? In what kind of situation? Does it work? Do you lie for other reasons? Do you do it a lot?
87. When you lie, do you often end up convincing yourself, so that you no longer know what the truth is?
88. Do you find that you often have to use other people or to step on a few toes to get what you want? In what kind of situation?
89. Do you think people are easy to con or manipulate? Do you ever do it? How do you do it? Are you good at it?
90. Do you do anything crazy for fun (besides crime – rock climbing, bungee jumping)? What?
91. How do you feel about yourself now? How is your self-esteem? How would you rate your self image from 1 to 10?
92. Do you often feel empty inside? How about lonely? Bored?
93. How do you feel when you are spending some time alone? Do you generally try to avoid being alone? How so?

94. Are you satisfied with your life so far? Is there anything missing in your life? Is there anything about you that needs improvement? If you could change your personality in some ways, how would you want to be different?
95. Have you all of a sudden changed your sense of who you are and where you are headed?
96. Has anyone close to you ever died? (*If not, ask anyone ever seriously ill.*) How did it affect you? Did you go to the hospital / funeral? Do you think that you've dealt with it now?
97. What is the most upset you have been?
98. What is the happiest you have ever been?