An Examination of the Abilities, Risks, and Needs of Adolescents and Young Adults with Fetal Alcohol Spectrum Disorder (FASD) in the Criminal Justice System

by

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Abstract

Fetal alcohol spectrum disorder (FASD) comprises the continuum of permanent deficits caused by alcohol consumption during pregnancy, which may include brain injury, neurobehavioural impairment, growth restriction, and physical birth defects. Individuals with FASD experience numerous adverse outcomes, including high rates of involvement with the criminal justice system. This dissertation examined the psycholegal abilities, justice-system experiences, and risks associated with prospective offending in 50 youth with FASD. The reliability and predictive validity of three commonly used youth risk assessment tools were also examined. Results were contrasted with a second group of 50 justice-involved youth without prenatal alcohol exposure (PAE).

Participants included 100 justice-involved youth aged 12 to 23. Participants completed a battery of measures including Grisso's Miranda Instruments, the Understanding Police Interrogation Questionnaire, the Fitness Interview Test-Revised, the Wechsler Abbreviated Scales of Intelligence, and the Wide Range Achievement Test—4th ed. Rating scales including the Structured Assessment of Violence Risk in Youth, the Youth Level of Service/Case Management Inventory, and the Psychopathy Checklist—Youth Version, were also completed.

Youth with FASD demonstrated substantially more impairment in psycholegal abilities relevant to police interrogation and adjudication than participants in the comparison group. Intellectual ability and reading comprehension emerged as robust independent predictors of psycholegal abilities, though the FASD diagnosis also served as an independent predictor of youths' understanding and communication skills on the FIT-R. The two groups showed many similarities in legal experiences, including high rates of self-reported false confessions. Overall, the two groups demonstrated lengthy and serious offense histories. Youth with FASD showed earlier contact with the justice system and a higher volume of past offending, while comparison youth tended to be charged with fewer, but more serious offences. Youth with FASD recidivated earlier in the 3-month follow-up period and accrued more charges. They earned significantly higher continuous scores across risk assessment tools, and substantially more youth in the FASD group were rated as high or very high risk to reoffend. The risk assessment tools performed reasonably well in predicting general recidivism in youth with FASD. These findings are discussed in the context of current legal policy, clinical practice, and future intervention planning.

Keywords: fetal alcohol spectrum disorder; youth justice; psycholegal capacities; risk assessment

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This research represents one of the first efforts to examine issues concerning the criminal justice involvement of youth with an FASD diagnosis from an empirical standpoint. This is a sensitive area of research, and as such, this work has been the subject of healthy critical debate since its inception. I am indebted to a number of individuals and agencies who had the courage to assist me in examining the vulnerabilities of a very marginalized population of youth, towards the hope of fostering positive change.

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1. Introduction to Fetal Alcohol Spectrum Disorder and its Relevance in the Criminal Justice System

Fetal alcohol spectrum disorder (FASD) is an umbrella term referring to the spectrum of disabilities caused by alcohol consumption during pregnancy, which may include permanent brain injury and neurobehavioural impairments, growth retardation, and physical birth defects (Chudley et al., 2005). FASD is the leading cause of developmental disability among Canadian children. With an estimated national prevalence rate of 9 in 1000, FASD is identified as a major public health concern in Canada (PHAC, 2005). Individuals with FASD are thought to experience poor health outcomes at significantly higher rates than the general population, including serious mental illness and substance use, homelessness, and violence and victimization (e.g., Steinahuseen & Spohr, 1998; Streissguth, Barr, Kogan, & Bookstein, 1996). The justice system is a setting where youth with FASD are thought to be significantly overrepresented, with involvement rates of 60% in youth 12 and older, and as high as 23.9% in a forensic setting (Fast, Conry, & Loock, 1999; Streissguth et al., 1996). However, little is presently understood about their capacities to competently navigate formal criminal justice procedures, the nature of their justice-system involvement, or the risks and needs associated with their involvement in criminal activity. Thus, the present dissertation undertook further evaluation of these issues in a sample of justice-involved youth with an FASD diagnosis.

Though it has long been recognized that the effects of drinking significant amounts of alcohol during pregnancy are deleterious, the effects of prenatal exposure to alcohol (PAE) were only first documented by a French clinician, Lemoine and his colleagues, in 1968 (Calhoun & Warren, 2007). The diagnostic terms *fetal alcohol syndrome* (FAS) first appeared in the clinical literature in the 1970s, following publication of a series of articles describing a small number of case reports and a retrospective analysis of data linking what appeared to be shared *alcohol-related birth defects* (ARBD) resulting from the teratogenicity of alcohol (Clarren & Smith, 1978; Jones & Smith, 1973; see Calhoun & Warren, 2007 for a complete historical review). Since that time several classification systems and diagnostic

criteria have been established and the field has generally moved toward the goal of developing objective, empirically-supported diagnostic criteria for FAS and other alcohol-related conditions (Calhoun & Warren, 2007). Over time, several terms have been used to describe individuals with a spectrum of problems that fall short of the full FAS diagnosis, including *fetal alcohol effects* (FAE), ARBD, *partial FAS* (pFAS), and *alcohol-related neurodevelopmental disorder* (ARND). The term FASD has emerged as the preferred nomenclature among advocacy groups and federal agencies and is generally used as an umbrella term to cover the full range of difficulties experienced by individuals varying levels of PAE (Chudley et al., 2005; Sokol, Delaney-Black, & Nordstrom, 2003).

1.1. Epidemiology

Currently, knowledge of Canadian prevalence rates of FASD remains unclear as population-level research has yet to be undertaken (Davis, Desrocher, & Moore, 2011). Estimates derived from a number of prospective longitudinal studies in the U.S. suggest FASD occurrence rates range from 0.2 to 2.0 per 1000 live births, and 9.1 per 1000 births for FASD (Riley & McGee, 2005; Sampson, Streissguth, Bookstein, Little, Clarren, & Dehaene, 1997). Canada's Public Health Agency (2005) estimates a national prevalence rate of 9 in 1000. Small-scale studies have shown substantially higher rates in rural Aboriginal communities, however, these communities also tended to be marked by a lack of resources and multiple adverse social determinants of health. As Atcheson (2010) highlights, generalizations about any ethnic or cultural susceptibility with respect FASD are not empirically defensible. Though few studies have examined prevalence rates in correctional and forensic settings, two have identified rates of FASD ranging from 10.0% in a Federal Correctional Intake facility (MacPherson & Chudley, 2006) to 23.9% in a youth forensic inpatient assessment unit (Fast et al., 1999). However, due to limited diagnostic availability in both community and correctional settings, these estimates are thought to be substantially underrepresentative of the true rates of FASD across legal settings (Abel & Sokol, 1987; Clarren, Lutke, & Sherbuck, 2011; Clarren, Randels, Sanderson, & Fineman, 2001; Fast et al., 1999).

1.2. Diagnosis

Several diagnostic systems are employed across North America. The United States' Institute of Medicine (IOM) first published recommendations for diagnosis of FAS in 1996, and established the diagnostic nomenclature presently used in Canada: FAS with (or without) a confirmed history of alcohol exposure, pFAS, ARBD, and ARND (Stratton, Howe, & Battaglia, 1996). Shortly thereafter, Astley and Clarren (1999, 2000) developed the 4-Digit Diagnostic Coding system using data from the Washington State Fetal Alcohol Syndrome Diagnostic and Prevention Network of clinics. This system uses quantitative scales that grade the expression of the four key diagnostic features of FAS (growth deficiency; facial phenotype; central nervous system damage or dysfunction; and gestational exposure to alcohol). A score of 1 reflects absence of the feature and 4 reflects its extreme expression. Guidelines for the diagnosis of FASD in Canada were published in 2005 (Chudley et al., 2005) and reflect a harmonization of both the IOM terminology and 4-Digit Code approaches. Current best practices dictate that a comprehensive assessment should be undertaken by a multidisciplinary team, and ought to include a thorough social history, and both medical and neurobehavioural evaluations.

Multiple challenges complicate the diagnostic process and may account for the hypothesized under-estimates with respect to prevalence. Traditionally, mothers have not been asked about their alcohol use during prenatal care or delivery, and confirmation of PAE can be difficult to ascertain due to informants' reluctance to report alcohol use in pregnancy (e.g., Caprara, Nash, Greenbaum, Rovet, & Koren, 2007; Ernhart, Morrow-Tlucak). The effects of PAE frequently do not appear as an obvious birth defect, and there is currently no physiological diagnostic test designed to reliably confirm PAE (Caprara et al., 2007; Streissguth et al., 1996). In addition, the characteristic physical features of FASD are often absent in individuals who are affected at a lesser degree along the FASD continuum, making the lasting neurobehavioural deficits difficult to detect (May & Gossage, 2001). There is also a general lack of expertise in this area that limits diagnostic capacity in general health settings, and in particular, in forensic and correctional environments (Burd, Fast, Conry, & Williams, 2010; Burd, Rachael, Selfridge, Klug, & Juelson, 2003; Clarren & Lutke, 2008; Wedding et al., 2007). In addition, the current "gold standard" approach to diagnosis is very expensive, with the cost of a single assessment ranging between $2,500 and $5,500

(Clarren & Lutke, 2008). Historically, there has also been reluctance on the part of clinicians to diagnose FASD owing to the associated stigma of the condition (Sampson et al., 1997).

1.3. Presentation

The neuroanatomical, neuropsychological, and behavioural deficits resulting from the teratenogenic effects of PAE can be significant. However, these can also be wide-ranging and vary substantially between individuals (Baumbach, 2002; Chudley et al., 2005; Mattson & Riley, 1997). In general, several risk factors are associated with the degree of symptom presentation among those affected by PAE. These include the pattern of alcohol exposure itself (timing, dose, and rate of ingestion during pregnancy), the mother's physical and emotional health during pregnancy, her prenatal care, and individual differences in each mother-fetus pair (such as the genetically determined unique physiological response of the fetus to alcohol) (Baumbach, 2002; Carmichael Olsen et al., 1997; Astley & Clarren, 1999; Riley & McGee, 2005; Sood et al., 2001; Streissguth et al., 1996).

1.3.1. Physical Features

High levels of PAE during the first trimester of pregnancy often result in a distinct set of dysmorphic facial characteristics, including microcephaly, short palpebral fissures, a smooth philtrum, and a thin upper lip (Astley & Clarren, 1999). However, only a small proportion of children with PAE display these facial features and typically meet the criteria of full FAS. Growth deficits in height, weight, and head circumference are also often present during childhood, but may improve over the course of development with children later achieving average milestones during adolescence (Larkby & Day, 1997). It is important to emphasize that a diagnosis within the FASD continuum can be made in the absence of physical characteristics associated with PAE (e.g., ARND, Chudley et al., 2005).

1.3.2. Underlying Physiological Impact of PAE

The teratogenic effects of alcohol during gestational exposure are well-researched and generally result in permanent damage at the neurobiological level. A variety of techniques (e.g., magnetic resonance imaging, including resting, functional and diffusion technologies, single photon emission computed tomography, etc.) in human studies have demonstrated a broad range of impacted areas of the brain. These include overall

reductions in brain size and volume with particular impact in white matter (versus gray matter). Specific patterns of hypoplasia (underdevelopment of specific brain areas) have been demonstrated, including reductions in the volume and size of the left temporal lobe and hippocampus, cerebellum, basal ganglia, and caudate nucleus. Abnormal blood flow and activation patterns have also been shown in the frontal lobes and prefrontal cortex (see Davis et al., 2011; Mattson & Riley, 1997; or Niccols, 2007, for a full review).

1.3.3. Neuropsychological Features

Individuals affected by PAE experience a broad range of neuropsychological deficits ranging from general (overall intellectual functioning) to higher-level areas of function. Children with PAE show lower overall intellectual functioning, with a wide range of individual variability in skills (Mattson et al., 1997; Streissguth, Barr, Sampson, & Bookstein, 1994). Importantly, individuals with an FASD diagnosis may demonstrate overall IQ scores in the Low Average or Average range, but nevertheless have significant impairment in higher-order domains of neuropsychological functioning. Areas of deficit commonly include learning and memory, attention, language, processing speed, motor functioning, visuo-spatial functioning, executive functioning (self-regulation, working memory, set-shifting, cognitive flexibility, inhibition, and planning and organization), adaptive functioning, and motor functioning (see Davis et al., 2011; Mattson & Riley, 1997; and Niccols, 2007, for full reviews). Importantly, neuropsychological impairments tend to be long-lasting and may be present in the absence of any further physical characteristics (e.g., Streissguth et al., 1991).

1.3.4. Behavioural Features

Deficits at the neuroanatomical and neuropsychological levels may also serve to explain the resulting behavioural and social impairments frequently observed in children and adolescents with PAE (Davis et al., 2011). These impairments range widely, but often include problems such as impulsivity, poor judgment and planning skills, difficulty understanding cause and effect, social skills deficits, hyperactivity, and antisocial behaviour (lying, cheating, stealing, lack of guilt) (Nash et al. 2006; Rasmussen, Andrew, Zwaigenbaum, & Tough, 2008; Streissguth & Kanter, 1997). Mental health problems including anxiety, depression, withdrawal, and poor frustration tolerance are also common, with adult studies finding staggeringly high rates of comorbid mental health problems,

ranging as high as 90% (Barr et al., 2006; Famy, Streissguth, & Unis, 1998; O'Connor, 2001; O'Connor et al., 2002).

1.3.5. FASD and the Criminal Justice System

Given the range of neuropsychological, socio-emotional, and behavioural impairments with which individuals with an FASD diagnosis must contend, it is perhaps less surprising that they are thought to be overrepresented in justice and forensic settings. Indeed, in their large-scale prospective longitudinal study following youth and adults with PAE across developmental periods, Streissguth and colleagues (1996) found that as many as 60% had been in trouble with the law. Legal experts have identified a number of areas in which FASD may be relevant for both adolescent and adult suspects, including waiver of police interrogation rights and admissibility of statements, fitness to stand trial, determinations of criminal responsibility, and sentencing (Conry & Fast, 2000; Roach & Bailey, 2010), with particular emphasis on the vulnerability of younger suspects owing to their additional degree of developmental immaturity (Verbrugge, 2003). Canadian courts are also hearing new cases involving youth and adults with an FASD diagnosis with increased frequency (Roach & Bailey, 2010). Thus, clinical and legal professionals working at all levels of the justice system, as well as in correctional and forensic settings, are likely to encounter the diagnosis with more regularity.

In spite of these concerns, little empirical research has been conducted on the subject of FASD in the context of the criminal justice system. To date, much of the work used to inform policy decisions has been descriptive in nature, and little reliable evidence is available to inform clinical practice with this population (Verbrugge, 2003). The importance of undertaking empirical research in this area is particularly critical, given the height at which criminal courts typically set the bar for admissibility standards of forensic evidence (Peters, 2001; *R. v. Mohan*, 1994; Saunders, 2001). The lack of forensic research on FASD also stands in contrast to a large body of work focusing on a number of important issues salient for youth involved in the justice system.

For instance, research has clearly established that many adolescents experience difficulty understanding their legal rights, interacting with police during interrogation, understanding and participating in a criminal trial competently, and making legal decisions that reflect their best interests (Grisso, 1981; Grisso et al., 2003; McLachlan, Roesch, &

Douglas, 2011; Viljoen & Roesch, 2005). However, the relative impact of the neuropsychological, emotional, and behavioural deficits associated with FASD on an individual's capacity to competently navigate the various stages of formal arraignment and legal processing remains unknown. Little is also understood about the justice system experiences of this population, in terms of their early criminal contacts or offending patterns over time. While researchers have moved towards the development of a stronger knowledge base concerning adolescents' risks and needs with respect to offending trajectories and intervention/risk management approaches (Borum & Verhaagen, 2006), it remains unclear whether the risks and needs associated with antisocial behaviour and offending in the general population apply equally to youth and adults with an FASD diagnosis.

The following study undertook an empirical examination of these important issues. First, an evaluation of the police experiences and psycholegal abilities of youth with an FASD diagnosis was undertaken to assess possible vulnerabilities in their navigation of formal criminal justice procedures. Next, historical and prospective criminal justice experiences and offending patterns were examined, and risk/need profiles were measured to identify salient factors associated with risk for offending behaviour in youth with FASD. Importantly, data from this population was compared with a justice-involved sample of youth without PAE in order to gauge possible differences between the groups. The two sets of research questions are addressed in the following chapters, each of which is intended to stand-alone. Readers should note that descriptions of the sample and methods are the same for each chapter.

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2. Assessing the Psycholegal Abilities Relevant to Interrogation and Adjudication in Youth with FASD

Canadian legal tradition has a long-standing history of ensuring procedural protections for individuals who come into contact with the criminal justice system (Roach & Bailey, 2010). These protections are becoming more critical under the current Canadian Federal government's plan to introduce a renewed "get tough on crime" approach emphasizing greater accountability and more serious penalties for youth offenders (Cook & Roesch, in press). Safeguards are particularly important in cases where individuals are vulnerable, such as youth, those with mental illness, or diminished mental capacity (Grisso, 2003). Individuals with a diagnosis of *fetal alcohol spectrum disorder* (FASD) typically experience substantial challenges in daily living as a result of deficits and needs across these areas. Further exploration of their ability to benefit from procedural protections afforded within the Canadian youth justice system was undertaken in this study.

More recently, legal and clinical experts have highlighted youth with an FASD diagnosis as a potentially vulnerability subset of offenders in the context of criminal justice procedures (Conry & Fast, 2000; Roach & Bailey, 2010; Verbrugge, 2003). This is thought to result from a constellation of cognitive and behavioural deficits making it difficult for them to understand, reason, and communicate effectively across contexts. Though research in this area is presently limited, early findings suggest individuals with FASD are overrepresented in criminal justice settings, highlighting the frequency at which they likely come into contact with justice personnel and proceedings (Fast, Conry, & Loock, 1999; MacPherson & Chudley, 2006). Further complicating matters, these deficits are often "invisible" in that there is no obvious outward indicator of impairment, making the condition difficult to identify by laypersons such as police and lawyers.

2.1. Introduction

2.1.1. Interrogation, Rights Comprehension, and Confessions

Multiple legal safeguards are in place from the point when police initially approach and question an individual, through arrest, interrogation, and detention. Specifically, all Canadians are guaranteed protections under the *Canadian Charter of Rights and Freedoms* (*Charter,* 1982) including the right to silence, and the right to consult with counsel. Adolescents charged under the *Youth Criminal Justice Act* are afforded a number of enhanced procedural safeguards owing to their relative developmental vulnerability (*YCJA*, s.3(1)(b)(iii)); *R. v. L.T.H.,* 2008). These include the right to consult with a parent or other appropriate adult prior to giving a statement, as well as the right to be warned if they are at risk of receiving an adult sentence if charged with certain serious offenses.

In order for a young person to validly waive his or her rights, police officers must take additional care to ensure these rights are clearly communicated in a manner that ensures comprehension. The Supreme Court of Canada has clarified the full extent of this duty, requiring police to proactively identify youth who may have difficulty understanding their rights on an individualized basis. This includes efforts to ascertain any personal characteristics of the young person that may influence his or her ability to meaningfully waive those rights, educational level, language and vocabulary skills, capacity for understanding, possible learning disabilities, and previous experience with the criminal justice system (e.g., *R. v. L.T.H.*, 2008). The Supreme Court of Canada has also ruled that routine procedures employed by police officers (reading a warning card to youth, asking if they understand, and having them read and sign a waiver form) do not constitute sufficient efforts to ensure full understanding and appreciation (*R. v. L. T. H.,* 2008). Following this, youth must be provided an opportunity to exercise those rights, and also must make statements under voluntary conditions (e.g., not made under pressure, made under conditions under which an individual was likely to be of “operating mind” such as not being intoxicated or sleep deprived) (*YCJA,* S. 146).

Unfortunately, the extent to which even average adults can understand and thus meaningfully exercise their rights has been called into question by research findings demonstrating very poor comprehension rates in general. It is well established that younger adolescents, particularly those with lower intellectual abilities, experience great difficulty

understanding and appreciating their legal rights (Goldstein, Condie, Kalbeitzer, Osman, & Geier, 2003; Grisso, 1980, 2003; McLachlan, Roesch, & Douglas, 2011; Redlich, Silverman, & Steiner, 2003; Viljoen & Roesch, 2005). Indeed, the Supreme Court of Canada recently emphasized the extent to which developmental differences have been recognized in these matters by parliament and Canadian courts, including the finding that young persons do not understand their rights as well as adults, are less likely to assert those rights in the context of interrogation, and are more susceptible to the pressures of interrogation (*R v. L.T.H.*, 2008). These conclusions are well-supported in the literature (e.g., Goldstein et al. 2003; Grisso, 1981; Grisso & Pomicter, 1977; Peterson-Badali et al., 1999; Redlich, Silverman, & Steiner, 2003; Redlich & Goodman, 2003). Research also finds that the content of arrest warnings read to suspects varies substantially across jurisdictions in terms of wording difficulty, readability, and linguistic complexity (Helms, 2003; Helms & Holloway, 2006; Rogers, Harrison, Shuman, Sewell, & Hazelwood, 2007), with average required grade reading levels spanning far beyond the typical abilities of average adolescent offenders.

Given these findings, the additional cognitive and behavioural challenges frequently exhibited by youth with FASD may only serve to increase their risk of limited comprehension of both interrogation warnings and the waiver process. While there is no single phenotype related to PAE, individuals with FASD often exhibit an array of cognitive difficulties, including impaired general intellectual ability, limited academic skills, as well as specific neuropsychological deficits in domains including learning and memory, executive functioning, attention, language and speech, visuospatial ability, and motor skills (see reviews by Davis, Desrocher, & Moore, 2011; Kodituwakku, 2007; Mattson & Riley, 1997). Behaviourally, many children with FASD experience difficulty with attention, impulsivity, hyperactivity, aggression, delinquency, lie-telling and/or confabulation, stealing, cheating, as well as problems learning from mistakes and linking cause with effect (Davis et al., 2011; Mattson & Riley, 1997, 2000; Rasmussen, Talwar, Loomes, & Andrew, 2008).

It becomes quickly obvious that there is a high degree of overlap between the constellation of deficits frequently associated with FASD and risk factors for impaired psycholegal abilities found in adolescents and adults. At the most basic level, youth with an FASD diagnosis are more likely to face substantial problems even attending to and reading warnings presented in either oral or written formats. Beyond the basics, their level of cognitive impairment (including difficulties with verbal comprehension skills and reasoning) may predispose them to problems understanding the meaning of individual warnings, or

appreciating their overall function within the context of a police investigation. Setting aside the issue of whether police have sufficient knowledge to competently evaluate the psycholegal capacities of adolescents with FASD, the 'invisibility' of FASD in a suspect may render this task nearly impossible. Youth with FASD often present an appearance of verbal and social facility that masks substantial underlying deficits (Abkarian, 1992; Baumbach, 2002; Williams, 2006). LaDue and Dunne (1997) note "it is difficult for many professionals in the legal system to understand these problems and limitations as people with [FASD] often 'sound' or 'look' competent, capable, and rational" (p. 147).

During the course of a police investigation, the main purpose of interrogating a suspect is to secure a confession (Leo, 2008). Indeed, confessions reflect one of the most powerful pieces of evidence resulting in convictions, and police officers are explicitly trained in coercive methods designed to extract statements (see Kassin et al., 2010, for a complete review). Under these conditions, vulnerable suspects are at increased risk not only of making statements against their best interests, but also for producing false or inaccurate statements, including false confessions. Though the prevalence of false confession rates remains difficult to estimate, researchers agree they occur with relative frequency (Kassin et al., 2010) and a significant literature has been accumulated on the subject (Redlich, Kulish, & Steadman, 2011). Studies using self-report methodology to study false confession rates have shown rates ranging from 12% for adult prison inmates (Sigurdsson & Gudjonsson, 2001) to 22% of offenders with mental health problems (Redlich, Summers, & Hoover, 2010).

Research has identified a number of personal risk factors associated with suspects' vulnerability to police tactics in interrogation, including younger age, impaired intellectual ability, and the presence of mental health problems (Appelbaum & Appelbaum, 2004; Drizin & Leo, 2004; Redlich, 2004). Even average adolescents may experience difficulty making sound decisions in the context of an interrogation due their relative developmental immaturity. For example, younger children and adolescents are generally less likely to think strategically about their decisions (Peterson-Badali & Abramovitch, 1993), less future-oriented, less likely to weigh the consequences of their decisions, and more often impulsive in their actions (Cauffman & Sternberg, 2000; Halpern-Felsher & Cauffman, 2001). Suspects provide false confessions for a number of reasons, including factors internal to the suspect, such as those already described, as well as external factors. For example, Redlich et al. (2010) recently asked individuals to describe their reasons for providing a past false

confession and found the most common reasons related to wanting to stop the questioning or to go home (65%), to protect the true perpetrator (53%), and because of police pressure (48%).

In the context of police interrogation, adolescents with FASD are hypothesized to experience a number of challenges above and beyond normative developmental limitations. In addition to cognitive and behavioural deficits previously described, these include a high prevalence of mental health problems, and limited academic abilities. Youth with FASD also tend to present with immature interpersonal and social skills, such as the tendency to trust others, a strong desire to please persons in authority, and high levels of suggestibility (e.g., Brown & Gudjonsson, 2011; Conry & Fast, 2000; Dagher-Margosian, 1997; Fast & Conry, 2004; LaDue & Dunne, 1997; Streissguth & Kanter, 1997). Compared to average adolescents this may increase their vulnerability to potentially manipulative or coercive tactics employed by police during interrogation.

2.1.2. Fitness to Stand Trial

Following arrest and questioning, additional formal safeguards protect individuals' rights during the pretrial, trial, and sentencing phases of the legal process. In Canada, adolescent and adult defendants must be competent to proceed to adjudication in order for a trial to be fair. Under Section 2 of the *Criminal Code of Canada*, a defendant who is unable to meaningfully participate in his or her defence, due to mental disorder, is found unfit to stand trial if he or she is (a) unable to understand the nature or object of the proceedings, (b) understand the possible consequences of the proceedings, or (c) communicate with counsel. While FASD is not included in the diagnostic and statistical manual for mental disorders (DSM-IV-TR, APA, 2000), the diagnosis has been accepted by Canadian courts in both adolescent and adult jurisdictions as a legally relevant mental disorder in determinations about arrest rights comprehension, admissibility of statements, and fitness to stand trial (e.g., *R. v. D.B.,* 2003; Roach & Bailey, 2010). However, Canadian case law underscores a highly conservative standard of impairment in order for a defendant to be found unfit to proceed to trial. Provided his or her understanding of the requisite information and ability to communicate with counsel is sound, a defendant need not have the capacity to act in his or her best interests or make what others might judge to be a "good" legal decision (*R v. Taylor,* 1992; *R v. Whittle,* 1994). As a result, very few Canadian defendants are found unfit in the absence of active serious major mental illness (Roesch et al., 1997).

Research findings in this area follow the same pattern earlier described for compromised capacities in rights comprehension and waiver decisions. Specifically, younger adolescents (below age 15), and individuals with poor intellectual abilities show high rates of deficits in the legal capacities relevant to adjudication (Grisso et al., 2003; Peterson-Badali & Abramovitch, 1993; Pirelli, Gottdiener, & Zapf, 2011; Redlich et al., 2003; Viljoen & Roesch, 2005). In addition, several forms of psychopathology have been associated with deficits in this area, including diagnosed learning disabilities, attention problems, psychosis, and externalizing behaviours (Grisso et al., 2003; LaVelle Ficke et al., 2006; Ryba & Zapf, 2011; Viljoen & Roesch, 2005; Warren et al., 2003). In addition to the overlapping risk factors and deficits previously described in the case of youth with FASD, they also experience high rates of comorbid mental health problems, with estimates ranging as high as 90% (Famy, Streissguth & Unis, 1998; O'Connor et al. 2002; Streissguth, Barr, Kogan, & Bookstein, 1996). Several Canadian legal cases have ruled on the issue of fitness to stand trial, and decisions have generally supported the association between cognitive deficits (such as memory, intellectual ability, and attention) and a lack of fitness for trial (e.g., *R. v. D. (W.)* (2001), *R. v. J. (T.)* (1999), & *R. v. D. B.* (2003)).

In spite of wide-ranging concerns from clinical and legal experts concerning the psycholegal abilities of individuals with FASD, research to date has not examined these skills in the population and little is understood about the past interrogation experiences of individuals with FASD from an empirical perspective. This knowledge gap is problematic for several reasons. First, the likely overrepresentation of those with FASD in the justice system means police and legal professionals will encounter suspects with PAE quite often, with little empirically-based information to support their practices. Second, Canadian courts are coming to consider FASD at increasing rates without any sound evidence to assist them in rendering decisions. In spite of concerns regarding the high potential for limited psycholegal abilities in this population, it remains unclear whether they truly differ from other youth in the criminal justice system as a group, or, whether those risk factors identified in the general literature apply equally well in this population. Lack of knowledge in this regard also makes it very difficult for policy makers to implement informed decisions, such as training for legal experts and police officers in this area, funding court-ordered evaluations for FASD, or appropriate remediation strategies for those defendants deemed to have limited psycholegal abilities.

2.1.3. The Present Study

The present study aimed to develop a knowledge base in order to better understand the psycholegal capacities and interrogation experiences of youth and young adults diagnosed with FASD in the justice system. The decision to focus on youth and young adults in this study was made for several reasons including the fact that access to diagnosis is highly limited for adult offenders, as well as the likely increased risk of vulnerability present in youth with the diagnosis. A series of research questions and specific hypotheses were investigated:

- Question 1. Compared to other justice-involved youth, are those with FASD more likely to waive their arrest rights and to report a history of false confessions? *Hypotheses:* Drawing from the literature focusing on other vulnerable populations (such as those with impaired intellectual abilities), it was anticipated youth with an FASD diagnosis would report waiving their rights more frequently than non-diagnosed peers, and would also report an increased tendency to make false confessions.
- Question 2. Compared to other justice-involved youth, are those with FASD more likely to demonstrate impairment in the psycholegal abilities relevant to interrogation and to standing trial? *Hypotheses:* Based on research identifying overlapping risk factors for impairments in this area and the cognitive deficits associated with FASD, it was anticipated that youth with an FASD diagnosis would show higher levels of impairment across psycholegal abilities relative to their same-aged justice involved peers.
- Question 3. Finally, those factors most related to youths' waiver decisions, self-reported history of false confessions and current psycholegal abilities were examined to determine whether predictive patterns of association differed between youth with and without an FASD diagnosis. *Hypotheses:* It was anticipated that youth with more compromised general intellectual abilities, including youth with an FASD diagnosis, would be more likely to demonstrate impaired psycholegal abilities. In addition, it was expected that youth who demonstrated higher levels of psycholegal impairments would be more likely to report having waived their rights in past interrogations.

2.2. Method

2.2.1. Participants

Participants included 100 justice-involved adolescents and young adults (19 females and 81 males) ranging in age from 12 to 23 years (M = 17.53, SD = 1.59). Two participant groups were recruited, including 50 youth diagnosed with FASD, and a comparison group of 50 youth who did not have an FASD diagnosis and were not suspected of having sustained

prenatal alcohol exposure (PAE). Participants were drawn from two Canadian provinces (British Columbia and Manitoba) to increase generalizability of the findings. Participants from the FASD group were eligible to take part in the study if they had received a diagnosis of FASD by a multidisciplinary diagnostic team following the Canadian Diagnostic Guidelines (Chudley et al., 2005), and had current or recent (within 3 years) involvement in the criminal justice system as youth or adults. Youth in the comparison group were eligible to participate if they were not strongly suspected of PAE (as determined by file review and interview) and were also currently or recently involved in the justice system. A final study entry criterion required all prospective participants to have a file accessible at a provincial community corrections office in order to review participants' formal legal history.

Sample characteristics are presented in Table 2.1. Diagnostically speaking, participants in the FASD group had predominantly received a diagnosis of ARND. Participants from the two groups did not differ significantly with respect to age or gender. Aboriginal youth were overrepresented in the FASD group (86.0%, $n = 43$) relative to the comparison group (50.4%, $n = 27$), χ^2 (1, $N = 99$) = 12.96, $p = .002$, $\phi = .41$. However, overrepresentation rates in the comparison group were more consistent with National overrepresentation rates within justice settings, particularly in Manitoba (e.g., Porter & Calverley, 2011; Rudin, 2005). As expected, youth in the FASD group earned lower scores on academic and intellectual measures. While youth in both groups reported similar average education levels (grade 8, on average), youth in the FASD group earned significantly lower average reading grade levels ($M = 5.09$, $SD = 2.17$) compared to their same aged peers ($M = 7.78$, $SD = 2.96$), t (96) = 5.11, $p < .001$, $d = 1.04$. As expected, significant differences were also found in overall IQ, with the average IQ of participants from the FASD group falling at 79.43 ($SD = 10.73$), and that of comparison participants falling 10 standardized points higher, averaging 89.64 ($SD = 11.27$). Scores in the FASD group were consistent with those reported in other clinical FASD samples (e.g., Astley et al., 2009; Rasmussen, Horne, & Witol, 2006) while comparison scores were consistent with the lower scores commonly reported in samples of justice-involved youth (e.g., Syngelaki, Moore, Savage, Fairchild, & Van Goozen, 2009; Viljoen & Roesch, 2005).

Table 2.1. Sample Characteristics by Group

	FASD (*n* = 50)	Comparison (*n* = 50)	Analyses
FASD Diagnosis			
FAS	2.0% (*n* = 1)		
pFAS	10.2% (*n* = 5)		
ARND	88.0% (*n* = 44)		
Age	17.60 (*SD* = 1.84)	17.46 (*SD* = 1.30)	$t = .44$ $d = .09$
12-14	6.0% (*n* = 3)	2.0% (*n* = 1)	
15-18	64.0% (*n* = 32)	78.0% (*n* = 39)	
19-23	30.0% (*n* = 15)	20.0% (*n* = 10)	
Gender (%)			
Male	80.0% (*n* = 40)	82.0% (*n* = 41)	$\chi^2 = .06$ $\phi = -.02$
Female	20.0% (*n* = 10)	18.0% (*n* = 9)	
Ethnicity (%)			
Aboriginal	86.0% (*n* = 43)	50.4% (*n* = 27)	$\chi^2 = 12.96^{**}$ $\phi = .41$
Caucasian	12.0% (*n* = 6)	30.0% (*n* = 15)	
Other	2.0% (*n* = 1)	16.0% (*n* = 8)	
Academics			
Education	8.48 (*SD* = 1.66)	8.84 (*SD* = 1.67)	$t = -1.08$ $d = -.22$
Reading Level	5.16 (*SD* = 2.20)	7.78 (*SD* = 2.96)	$t = -4.99^{***}$ $d = -1.01$
IQ Score	79.43 (*SD* = 10.73)	89.64 (*SD* = 11.27)	$t = -5.01^{***}$ $d = -.93$
Adjudication Status			
Pre-adjudication	54.0% (*n* = 27)	46.0% (*n* = 23)	$\chi^2 = .36$ $\phi = .06$
Post-adjudication	46.0% (*n* = 23)	52.0% (*n* = 26)	
Custody Status			
Community	48.0% (*n* = 24)	42.0% (*n* = 21)	$\chi^2 = .36$ $\phi = .06$
Custody	52.0% (*n* = 26)	58.0% (*n* = 29)	
First Justice Contact			
Age first police contact (SR)	11.88 (*SD* = 2.24)	12.47 (*SD* = 2.12)	$t = -1.34$ $d = -.27$
Age first charge	13.92 (*SD* =1.68)	14.96 (*SD* = 1.72)	$t = -3.04^{**}$ $d = -.61$
Sample Location			
British Columbia	30.0% (*n* = 15)	28.0% (*n* = 14)	$\chi^2 = .05$ $\phi = .02$
Manitoba	70.0% (*n* = 35)	72.0% (*n* = 36)	

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

Note. FAS = Fetal alcohol syndrome
ARND = Alcohol-related neurodevelopmental disorder
pFAS = Partial fetal alcohol syndrome.

Participants from both groups described early and substantial experiences with police and the criminal justice system. Overall, the combined sample indicated experiencing their first contact with police at age 12 (*SD* = 2.19). However, official records indicated youth in the FASD group received their first formal charge 1 year earlier (*M* = 13.92, *SD* = 1.68) than comparison participants (*M* = 14.96, *SD* = 1.72), *t* (97) = -3.04, *p* = .003, *d* = -.62. In terms of their current legal status, participants were drawn from both community and

custody settings at even rates, and were evenly distributed on pre- versus post-adjudication status at the time of their enrolment in the study. Overall, participants in both the FASD and comparison group were relatively similar in terms of their overall legal experience and situation, with the exception that youth in the FASD group had approximately 1 year more experience with formal charges, on average, relative to their same-aged peers.

Participants in both groups were evenly drawn from the recruitment sites, though a greater number of participants were recruited in Manitoba (n = 71) compared to British Columbia (n = 29), due largely to ease of recruitment for the FASD sample in Winnipeg. Several site-based differences were found both within and between the FASD and comparison groups. With respect to demographic and academic indicators, comparison youth recruited from Manitoba differed from those recruited in BC with respect to age, ethnicity, average grade reading level, and IQ. Specifically, they were older than youth from BC (M = 17.69, SD = 1.19 vs. M = 16.86, SD = 1.41), t (48) = -2.12, p = .04, d = .61. A greater proportion of participants in the comparison group were of Aboriginal background from Manitoba, whereas none of the youth recruited into this group in BC reported Aboriginal heritage. While Aboriginal representation rates are substantially higher in youth justice populations in Manitoba compared to BC (Statistics Canada, 2007), this difference is nonetheless significant. Comparison youth in Manitoba earned lower average reading grade level scores (M = 7.06, SD = 2.68) vs. BC (M = 9.63, SD = 2.94), t (48) = 2.96, p = .005, d = .85 as well as lower overall IQ scores (M = 87.08, SD = 10.72, vs. M = 96.21 SD = 10.25), t (48) = 2.74, p = .009, d = .79.

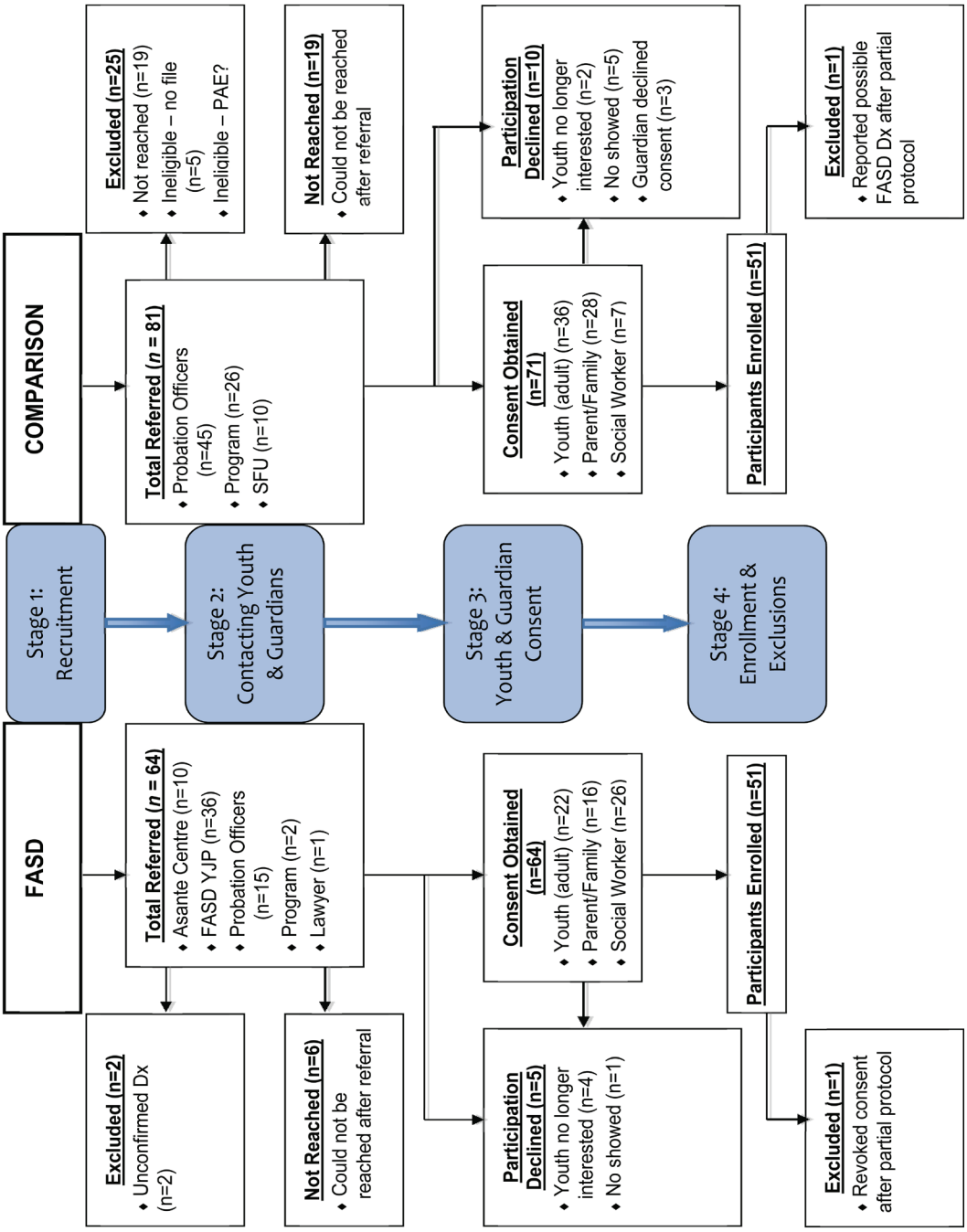
In terms of justice-system variables, significantly more kids in the comparison group from BC were post-adjudication (85.7%, n = 12) relative to youth from Manitoba (38.9%, n = 14), $\chi^2(1, N = 99) = 8.85$, p = .003, φ = -.10. Lastly, youth from both groups were in custody at the time of study enrolment at higher rates in Manitoba (67.6%, n = 48) compared to those recruited in BC (24.1%, n = 7), $\chi^2(1, N = 99) = 15.72$, $p < .001$, φ = .40, but this is again consistent with regional differences in youth incarceration rates. For instance, in 2008-2009, youth remand admission rates in British Columbia were 36 per 100,000, versus 176 per 100,000 in Manitoba. Youth custody admission rates also differ similarly between the provinces (Calverley, Cotter & Halla, 2010). In terms of justice-system variables, significantly more youth in the comparison group from BC were post-adjudication (85.7%, n = 12) relative to youth from Manitoba (38.9%, n = 14), $\chi^2(1, N = 99) = 8.85$, p = .003, φ = -.10.

2.2.2. Procedure

Recruitment procedures for the two groups of participants differed based on diagnostic status. Participants in the FASD group were recruited from a variety of settings across British Columbia (primarily in Vancouver and the Lower Mainland urban region) and Manitoba (primarily in Winnipeg and the surrounding urban region). Youth with a diagnosis were primarily recruited via clinical liaison workers at two FASD diagnostic clinics mandated to assess youth in the criminal justice system (The Asante Centre for FAS in British Columbia, and the Youth FASD Justice Program in Manitoba). Multidisciplinary teams in these clinics are either employed or contracted by the youth courts/justice system to complete FASD diagnostic assessments of adolescents undergoing adjudication under the *YCJA*. Other professionals were also encouraged to refer participants to the study, including BC Ministry of Child and Family Development FASD Key Workers, and probation officers and lawyers in both provinces. Recruitment flyers were circulated at a large National-level FASD conference in Vancouver, BC. Participants in the comparison group were recruited from probation offices and justice-stream school and vocational programs in the same jurisdictions from which FASD participants were drawn.

Specific data about recruitment, enrollment procedures, and participation rates are described in Figure 2.1. Overall, we received 145 referrals to the study. Of these, 43 were not enrolled for a variety of reasons, including not being able to reach participants' referred to the study, not having an accessible probation file to review, or having an unconfirmed FASD diagnosis or suspicion of PAE. Active parental consent was obtained for all participants under the age of majority in each study jurisdiction, with only 3 guardians declining consent for their child/ward to participate in the research. From the total pool of youth referred to the study, 102 were enrolled, resulting in a participation rate of 70.3% for the overall study. This figure is generally in keeping with examples of other longitudinal studies of adolescent risk, ranging between 70% and 80% (e.g., Green, Gesten, Greenwald, & Salcedo, 2008; Schubert et al., 2004). Two enrolled participants were later dropped from the study due to a failure to complete most of the protocol. The first declined to continue his involvement in the study following a single 20-minute study session (FASD sample) and the second completed half the study protocol, but then reported a possible FASD diagnosis that could not be confirmed by way of formal assessment, and was thus excluded from both study groups.

Figure 2.1. Study Recruitment Procedures



Youth recruited into the FASD group generally represented a good fit with respect to the pool of youth assessed via the project's two principal main referral streams. Overall, youth referred to these clinics tend to be male (approximately 75.0%), and a substantial proportion were of Aboriginal heritage. Youth in the comparison group were actively

recruited to ensure a relative fit with participants in the FASD group. In general, prospective referral sources such as probation officers were requested to refer any and all prospective participants who met study eligibility criteria. However, efforts were also made to target comparison youth with respect to their detention status at rates comparable to the FASD group, as well as reflecting youth incarceration rates both study jurisdictions. Specifically, referral sources were asked to recommend participants at similar rates with respect to custody status in an effort to match the baseline offending severity patterns between the groups. Overall, the goal of this approach was to recruit a group of youth into the comparison sample who closely approximated youth in the FASD sample, thereby increasing the chances that PAE reflected the key difference between groups. This strategy was not without limitations, and possibly resulted in recruitment of a comparison group that may not generalize to reflect the entire population of youth in the criminal justice system. Rather, they likely best represent a group of relatively serious offenders who share a pattern of high risks and needs, but were not exposed to alcohol in utero.

All study procedures were consistent with current ethical protocols. Approval was obtained from the appropriate ethical review boards at Simon Fraser University, and the British Columbia Youth Justice/Youth Forensic Psychiatric Services Research Ethics Board. Written approval was also provided by BC Corrections. Formal approval to access youth justice records was obtained via a successful application to the Youth Court under the *Youth Criminal Justice Act* in Manitoba. Written approval was also obtained from Manitoba Justice (covering adult and youth probation offices). Additional clinical agencies in both BC and Manitoba provided written approval for participant recruitment from their sites.

During the referral process, initial contact with prospective participants was facilitated via liaison staff by first requesting permission from youth and/or their legal guardians to forward their information to the research team. Prospective participants were then extended an invitation to participate. Active parental consent was obtained for youth participants following appropriate statutes governing age of majority in each province for both the FASD and comparison groups, while older participants provided their own consent. Key elements of informed consent were reviewed with participants and legal guardians prior to enrolling them in the study. Owing to the possible cognitive limitations of participants in both groups, all aspects of the informed consent process were carefully explained to participants, and youth were asked to correctly paraphrase the main elements before undertaking the study. During the consent procedure youth and guardians were also asked for permission to

access their youth justice records and clinical records to confirm their FASD diagnosis and code justice-system involvement. Clinical records requested were limited to assessment results/reports from FASD diagnostic evaluations and did not include broad ranging health records. Participants were offered a $25 gift card for their participation in the study.

Procedures for both the FASD and comparison groups were parallel. After obtaining informed consent, participants completed a semi-structured interview lasting between two and 3 hours, on average (2.25 hours for comparison participants, and 3 hours for FASD participants). This interview included questions gauging demographic information, legal experiences, justice system involvement, educational history, and mental health history. Participants also completed several clinical forensic assessment measures at this time, as well as intellectual and academic testing. Interviews were conducted in a variety of settings, most typically at the clinic or probation office from which a participant was recruited. Study measures were selected to accommodate the multiple challenges youth with FASD experience in didactic testing (e.g., attention problems, reading difficulties, poor frustration tolerance), breaks were offered frequently, and the protocol was administered over several sessions as required.

All measures in the study protocol were administered and scored by one of three examiners: the lead experimenter with Doctoral level training in psychology, and two research assistants with undergraduate degrees in psychology. The lead experimenter received training and supervision on the instruments from a senior clinical forensic psychologist who is an expert in this area, while research assistants were trained by the lead experimenter. Each examiner completed a total of five study protocols during the training phase of the study: three cases were completed and compared with “gold standard” scores derived by the lead experimenter and the clinical expert. Two complete protocols were administered under observation by the lead examiner to ensure accurate administration of the materials prior to beginning independent administration. Regular meetings were held to review scoring drift after scoring interrater reliability cases to promote reliable administration of the study protocol.

2.2.3. Measures

Youth Characteristics/Individual Differences

Demographic Variable

Participant information on age, gender, ethnicity, and early legal experiences were obtained from participant interview and confirmed with file information. Information on age at first offence was coded from probation files, and diagnostic information was coded from FASD reports for that group.

Wechsler Abbreviated Scale of Intelligence (WASI; Psychological Corporation, 1999)

The WASI is a screening instrument developed to serve as a brief and reliable measure of intelligence. The WASI can be administered to individuals age six through 89 years and provides measures of verbal, nonverbal, and general cognitive functioning. The WASI evidences good reliability and validity across adolescent and adult samples (Psychological Corporation, 1999). Because the Full Scale IQ (FS-IQ) provides the most precise estimate of intellectual ability, this score was used in all analyses (herein referred to as IQ).

Wide Range Achievement Test—4th Edition (WRAT-4; Wilkinson & Robertson, 2006)

The Word Reading and Sentence Comprehension subtests from the WRAT-4 were administered to all participants as a brief measure of reading ability. The Word Reading subtest evaluates participants' letter and word decoding skills through a visual word recognition task, while the Sentence Comprehension measures an individual's ability to gain meaning from words and to understand ideas and information contained in sentences through the use of a modified cloze technique. Administration time ranged from 5 to 10 minutes depending on participants' skills. Reliability and validity of the instrument have been found to be adequate (Wilkinson & Robertson, 2006).

Outcome Variables: Legal Experience and Psycholegal Abilities

Interrogation Experiences, False Confessions, and Rights Comprehension Confidence

A semi-structured interview was developed to query participants' about the details of their most recent police interview/interrogation, including when they were last interviewed by

police, whether they were provided their rights at the time of their arrest, their decisions with respect to waiving the right to silence and/or their right to consult a lawyer or other adult, and whether they ultimately provided a statement or confession. Participants' were also asked if they were under the influence of any substances during their interview. Participants were next asked if they had ever provided a false confession to police, their reasons for doing so, and whether this confession resulted in a formal charge or conviction. Finally, following administration of measures assessing rights comprehension and appreciation, participants were asked to rate their self-assessed level of understanding and confidence in making decisions about their rights on a 5-point Likert scale.

Instruments for Assessing Understanding and Appreciation of Miranda Rights

Grisso's Miranda Instruments (Grisso, 1998) assess an examinee's understanding and appreciation of a typical arrest warning, including the right to remain silent, possible use of statements provided in court, the right to counsel prior to and during interrogation, and the right to free counsel. Three instruments assess understanding of interrogation warnings. *Comprehension of Miranda Rights* (CMR) measures examinees' ability to paraphrase the elements of the interrogation warnings, *Comprehension of Miranda Rights—Recognition* (CMR-R) requires examinees to recognize sentences that have the same meaning as a statement from the interrogation warnings, and *Comprehension of Miranda Vocabulary* (CMV) requires examinees to define words contained in the interrogation warnings. The final instrument, *Function of Rights in Interrogation (FRI),* assesses the appreciation of interrogation rights. It consists of three separate subscales, including *Nature of Interrogation* (NI), *Right to Counsel* (RC), and *Right to Silence* (RS). On the FRI measure, examinees are shown drawings and read short vignettes about various legal scenarios. The instruments demonstrate adequate validity and high inter-rater reliability (Grisso, 1998).

Canadian Rights Comprehension Supplement (McLachlan, 2006)

Additional items following the format of Grisso's Instruments (content style/scoring rules) were developed to reflect jurisdictionally specific language and warnings in the Canadian legal context. Substantive differences include an additional warning about the right to have a parent/adult present during questioning for adolescent suspects, and a warning about the possibility of receiving an adult sentence. Several additional vocabulary items are also included (e.g., "lawyer" vs. "attorney"). These items were developed following a thorough review of applicable Canadian legislation (*YCJA*; *Charter*) and case law. We

have previously administered these items to community sample of Canadian youth (ages 12 to 19) and scoring for these items yielded good interrater reliability (McLachlan, 2006; McLachlan, Viljoen, Roesch, & Yousofi, 2009). Administration of these additional items takes 5 to 10 minutes and the items are administered following the original instrument.

Understanding Police Interrogation Questionnaire (UPIQ; Woolard, Cleary, Harvell, & Chen, 2008)

The UPIQ is an 8-item questionnaire developed to assess the factual and functional understanding of police interrogation practices. Six yes/no questions assess respondents' understanding of police interrogation practices: Can a police officer stop you in the street and question you even if you have done nothing wrong? (no); Can you walk away from a police officer who is questioning you? (yes); Can the police lie to you during an interview? (yes); Do police officers have to contact parents when they take their children to the police station? (yes); Do police have to notify parents when their child is being viewed as a witness or suspect? (no); Do police have to wait for parents to arrive at the station before questioning their child (no). Two questions assess the applied outcome of the right to remain silent: Can you walk away from a police officer who is questioning you? (yes); If you start to answer a police officer's questions, can you change your mind and stop the interview? (yes). The correct responses were scored as correct/incorrect based on a review of Canadian legislation and case law following consultation with a legal expert in the area.

Fitness Interview Test—Revised (FIT-R, Roesch, Zapf, & Eaves, 1998)

The FIT-R is a semi-structured clinical interview developed for use by mental health professionals in evaluations of fitness to stand trial. The FIT-R was designed as a structured clinical judgment instrument that guides evaluators through an assessment of specific psycholegal abilities required of a defendant to stand trial (factual knowledge of criminal procedure, their appreciation of the nature and object of the proceedings, and their ability to participate in their defense and communicate with counsel). The measure comprises 16 items and takes approximately 30 to 45 minutes to administer. An individual's degree of impairment on each item is rated using an objectively defined 3-point scale (0, 1, 2). In the present study, participants' scores were reversed coded in all analyses, with higher scores reflecting better understanding. Research indicates the FIT-R has adequate interrater reliability and construct validity in adolescent samples (Viljoen, Vincent, & Roesch, 2006).

2.2.4. Data Analysis

Interrater Reliability

To examine interrater reliability of the WASI, Grisso's instruments and Canadian Supplement, and the FIT-R, a second rater attended 14 (14.0%) of the baseline interviews and reviewed all available records before independently scoring each of the instruments. Intraclass correlation coefficients for single raters (ICC) were calculated using a two-way random effects model (McGraw &Wong, 1996). The ICC for subscale, total scores, and structured professional judgment ratings on all instruments fell in the excellent range, with a single exception (Cicchetti & Sparrow, 1981). WASI ICC values ranged from .81 to .99, Grisso's instruments values ranged from .95 to .99, Canadian Supplement values ranged from .92 to .93 and FIT-R values ranged from .70 (Section 1, adequate) to .95.

Univariate and Bivariate Analyses

Descriptive information across measures is presented at the univariate level for the purposes of informing clinical practices and examining functional differences between youth with and without an FASD diagnosis. In order to conserve statistical power, all analyses examining associations between predictors and outcomes were first conducted at the bivariate level using Pearson Product Moment correlations and Point-bi-serial correlations before selecting significant predictors for inclusion in multivariate analyses.

Multivariate Analyses

Following an examination of significant associations at the bivariate level, multivariate analyses were conducted across research questions using a series hierarchical multiple regressions. In each set of analyses, individual predictors were added individually in each step of the model (e.g., predictor 1 in Step 1; predictors 1 and 2 in Step 2; predictors 1, 2, and 3 in Step 3). This permitted an examination of each predictor's individual contribution to the overall predictive model while controlling for the contribution of other predictors in the model. Predictors were selected following a thorough review of the adolescent forensic literatures spanning risk factors for rights waiver, false confessions, rights comprehension, and adjudicative capacity (see Table 2.2). Selected factors were chosen on the basis of both robust associations in the literature, as well as relevance in the context of youth with an FASD diagnosis. While criminal justice system experience does not demonstrate as consistent a pattern of findings in these literatures, Canadian courts continue to emphasize

the importance of this factor in determining a young person's psycholegal abilities, and thus was selected for inclusion in analyses.

Table 2.2. Literature Supporting Selection of Risk Factors in Psycholegal Abilities and Decision Making

	Age	Cognitive Abilities	Academic Skills/School Achievement	Criminal Justice Experience
Waiver Decisions & Reasoning				
Grisso & Pomicter (1977)	√			
Peterson-Badali et al. (1999)	√			√
Abramovitch et al. (1995)	√			
Grisso et al. (2003)	√	√		
Grisso (1981)	√			X
False Confessions				
Drizin & Leo (2004)	X	X		
Redlich et al. (2010)				X
Goldstein et al. (2003)	√			
Redlich & Goodman (2003)	√			
Leo (1996)	√	√		√
Rights Comprehension				
Viljoen & Roesch (2005)	√	√		√
McLachlan et al. (2011)	√	√		X
Goldstein et al. (2003)	√	√	√	
Peterson-Badali et al. (1999)	√			
Grisso (1980, 1981)	√	√		
Abramovitch et al. (1995)	√			
Redlich et al. (2003)	√		X	X
Fitness to Stand Trial				
LaVelle Ficke et al. (2006)	√	√	√	√
Burnett et al. (2004)	√	√		
Cooper (1997)	√	√		
McKee (1998)	√			
Cowden & McKee (1995)	√	√		
Baerger et al. (2003)	√		√	
Redlich et al. (2003)	√		√	X
Warren et al. (2003)		√		
Grisso et al. (2003)	√	√		X

Moderated Hierarchical Linear Regression

Significant differences between the two sites were found for a number of demographic characteristics (age, ethnicity, average grade reading level (WRAT-4 scores) and IQ. To assess the possibility of confounding effects of these factors on participants' rights comprehension and trial-related adjudicative capacities, a series of moderated hierarchical linear regressions were conducted. For each dependent variable, the predictor and sample location, and then the interaction between the predictor and sample location, were entered into a regression equation (Baron & Kenny, 1996). None of the interactions between predictors and sample were significant, indicating the predictors were not related to outcomes in any series of research questions differentially across samples. Therefore, it was possible to collapse across samples in the following analyses.

General Procedures

Where multiple comparisons were made, a modified Bonferroni correction was applied that set an overall *p* value of .10 and divided that value by the number of tests conducted within a single set of analyses. A more liberal significance value was chosen because the application of a traditional Bonferroni correction to a .05 significance level in cases where comparisons are drawn between measures that are highly intercorrelated often results in estimates that are too conservative (Sankoh, Huque, & Dubey, 1997). Effect sizes for *t*-tests (Cohen's *d*), Chi-square (*phi*), and multiple regression (Cohen's f^2) analyses are reported throughout. These reflect the size of statistically significant differences, and each varies in size by convention. Cohen's *d* values range from .2 (small) to .5 (medium) to .8 and above (large), *phi* values range from .1 (small) to .3 (medium) to .5 and above (large), and Cohen's f^2 range from .02 (small), to .15 (medium), to .35 and above (large) (Cohen, 1988). All analyses were conducted using IBM Statistics 19 for Macintosh OS.

2.3. Results

2.3.1. Police Interview Experiences

Participants in both samples were asked to report on their most recent police interview or interrogation to ascertain possible differences in experiences and waiver decisions between the groups (see Table 2.3).

Table 2.3. Participant's Self-Report about Most Recent Police Interview

	FASD	Comparison	Analyses
Youth with past interview	100.0% (*n* = 50)	92.0% (*n* = 46)	χ^2 = 4.17 ϕ = .20
Days since last Interview	316.43 (*SD* = 302.53)	343.75 (*SD* = 378.70)	*t* = -.39 *d* = -.08
Number formally charged	70.0% (*n* = 35)	80.4% (*n* = 37)	χ^2 = 1.93 ϕ = .14
Location of Interview			
Police Station	68.0% (*n* = 34)	84.8% (*n* = 39)	
Home	12.0% (*n* = 6)	4.3% (*n* = 2)	χ^2 = 3.45 ϕ = .19
Community (crime scene)	6.0% (*n* = 3)	4.3% (*n* = 2)	
Other	12.0% (*n* = 6)	8.7 % (*n* = 3)	
Duration of Interview (minutes)[a]	160.67 (*SD* = 291.81)	323.89 (*SD* = 398.79)	*t* = -2.63 *d* = -.54
Influence of Drugs/Alcohol	26.0% (*n* = 13)	40.0% (*n* = 17)	χ^2 = 1.68 ϕ = .13
Recalled Rights Administered	70.0% (*n* = 35)	87.0% (*n* = 40)	χ^2 = 4.73 ϕ = .22
Recalled Rights Waived	26.0% (*n* = 13)	21.7% (*n* = 10)	χ^2 = 2.98 ϕ = .18
Don't know/Unsure	28.0% (*n* = 14)	39.1% (*n* = 18)	
Signed Youth/Adult Waiver	32.0% (*n* = 16)	43.5% (*n* = 20)	χ^2 = 3.82 ϕ = .20
Don't know/Unsure	20.0% (*n* = 10)	10.9% (*n* = 5)	
Consulted Adult	50.0% (*n* = 25)	54.3% (*n* = 25)	χ^2 = 1.93 ϕ = .01
Lawyer/Legal Aid	38.0% (*n* = 19)	39.1% (*n* = 18)	χ^2 = .01 ϕ = .01
Parent/Guardian/Other Adult	18.0% (*n* = 9)	23.9% (*n* = 11)	χ^2 = 0.51 ϕ = .07
Made a Formal Statement	34.0% (*n* = 17)	39.1% (*n* = 18)	χ^2 = 1.64 ϕ = .13
Admitted Guilt/Provided Confession	40.0% (*n* = 20)	43.5% (*n* = 20)	χ^2 = 1.29 ϕ = .12

[a] Participants' average time spent in interview demonstrated significant positive skew, therefore analyses were conducted on a Log10 transformation of the variable (Tabachnik & Fidell, 1996).

Note. *N* = 96 in all analyses unless otherwise indicated. All analyses are non-significant following Bonferroni correction.

Overall, there were no significant differences in self-report between the FASD and comparison groups, indicating comparable past experiences. However, youth in the FASD group reported substantially shorter time spent in interview with police, with averages of approximately 2.75 hours compared to just under 5.5 hours for a single interview.[1] Overall, most participants had undergone a police interview sometime within the last 2 years, and the majority were custodial in nature with youth reporting a formal charge as a result of the associated investigation. Nearly one-third of participants in the overall sample indicated they were under the influence of drugs and/or alcohol at the time of their interview with police.

[1] Participants' reported time spent in interview with police demonstrated significant negative skew, therefore analyses were conducted on a Log10 transformation of the variable (Tabachnik & Fidell, 1996). Differences were substantial, but not significant following a Bonferroni correction for multiple comparisons.

Counter to initial hypotheses, there were no significant differences between the groups in terms of their report surrounding the waiver procedure or waiver decisions. The majority of participants recalled police administering their arrest warning prior to interview, though substantially fewer could remember whether they had waived their rights. Many were unsure about what the waiver process entailed when asked, but just over one-third recalled signing a youth waiver form during the interview. More than one-third reported invoking their right to counsel (38.5%, n = 37) and many consulted with a parent or adult (20.8%, n = 20). Many youth in both the FASD and comparison groups also reported invoking their right to silence, with only 41.7% (n = 40) indicating they had admitted fault to police, and 36.5% (n = 35) providing a formal statement to police regarding their crime. Participants were asked why they opted to either provide, or refrain, from sharing evidence with police about their criminal involvement. The most common reasons reported included true guilt, being intoxicated at the time of the admission, or expecting increased leniency from police for cooperating. Youth who declined to provide a statement about their involvement in the crime most often indicated they were actually innocent of the crime, or that they had a general rule against providing information to police. However, many were also unsure about their reasoning.

To determine which factors, if any, were predictive of youths' waiver decisions, we first examined bivariate associations (see Table 2.4) between a series of predictors (demographic characteristics, intellectual/academic abilities, and legal experience) and youths' waiver decisions (right to consult with counsel, right to consult with a parent/adult, right to silence), in the full sample who reported having undergone a recent police interrogation. None of the predictors were associated with participants' decision to consult a lawyer, parent or adult, or to remain silent following a Bonferroni adjustment for multiple comparisons. Associations between waiver decisions were also evaluated, and no significant patterns were detected, such that youths' decisions to consult with a lawyer, parent/other adult, or remain silent were made independently from one another in both groups. Interestingly, group differences concerning youths' actual guilt and their decision to remain silent emerged. Specifically, participants in the comparison group who indicated they were in fact guilty of the crime police were investigating were more likely to make an admission of guilt to police (r = .80, p < .001), compared to those who reported innocence. However, the same pattern did not emerge in participants with an FASD diagnosis, with their self-reported guilt being entirely unrelated to their decision to invoke their rights.

Table 2.4. Bivariate Associations between Predictors and Dependent Variables

	Group	Demographic Variables		Cognitive and Academics		Police Experience		
		Age	Gender	IQ	Reading Level	Age First Arrest	Total Charges	Average Severity
Waiver Decisions[a]								
Consult Lawyer[b]	.01	.16	-.02	-.01	-.02	-.04	.15	.05
Consult Adult	.07	-.16	.20	-.01	-.01	.04	-.21*	.27*
Remain Silent	.06	-.07	-.03	.08	.15	-.02	-.07	.07
False confessions	-.17	-.06	.06	-.12	-.09	.12	-.01	-.16
GRI-TOT-C	.45***	.07	-.18	.66***	.67***	.05	.20	.28**
CMR-C	.41***	-.01	-.21*	.53***	.52***	.05	-.17	.30**
CMR-R-C	.35***	.09	-.14	.43***	.42***	-.01	-.03	.09
CMV-C	.39***	.03	-.14	.63***	.66***	.12	.29**	.16
FRI	.27**	.12	-.10	.42***	.41***	-.03	-.05	.31**
FIT-R TOT	.49***	.03	-.08	.58***	.62***	-.01	-.20*	.17
Understanding	.46***	.09	-.17	.57***	.65***	-.04	-.10	.17
Appreciation	.33**	.11	-.04	.50***	.51***	-.04	-.09	.10
Communication	.42***	-.08	.02	.43***	.42***	.04	-.29**	.13

* $p < .05$, ** $p < .01$, *** $p < .001$.

[a] $N = 96$ and includes those participants who reported a having recently undergone a police interview.

[b] A waiver decision score of '1' reflects participants' report of *invoking* the right, e.g., opting to consult a lawyer, vs. whereas a score of '0' reflect waiving that right, e.g., declining to consult with counsel.

Note. Significance levels reflect values before Bonferroni corrections for multiple comparisons.

Participants' responses to the UPIQ are reported in Table 2.5. Overall, youth with an FASD diagnosis earned significantly lower scores on the measure, reflecting less correct knowledge about police practices in interrogation than comparison youth. In particular, youth in the FASD group were significantly more likely to mistakenly believe they could not change their mind and discontinue a police interview than the comparison group. In general, however, youth in both groups showed mixed levels of correct knowledge in this area, with more than half holding the incorrect beliefs that police can question an individual without cause, and that one cannot walk away from a police officer who is questioning them. It is also troubling to note that more than half of participants believed police could not lie to them during the course of an interview or investigation, although this view is incorrect.

Table 2.5. Participant's Understanding of Police Interrogation Practices (UPIQ)

	FASD (*n* = 50)		Comparison (*n* = 50)		Analyses
	% correct	(*n*)	% correct	(*n*)	
Can a police officer stop you on the street and question you even if you have done nothing wrong? (no)	38.0%	(*n* = 19)	44.0%	(*n* = 22)	χ^2 = .37 ϕ = .06
Do you have to answer a police officer's questions? (no)	76.0%	(*n* = 38)	94.0%	(*n* = 47)	χ^2 = 6.35 ϕ = .25
Can you walk away from a police officer who is questioning you? (yes)	36.0%	(*n* = 18)	52.0%	(*n* = 26)	χ^2 = 2.60 ϕ = .16
If you start to answer a police officer's questions, can you change your mind and stop the interview? (yes)	60.0%	(*n* = 30)	92.0%	(*n* = 46)	χ^2 = 14.03** ϕ = .37
Can the police lie to you during an interview? (yes)	52.0%	(*n* = 26)	68.0%	(*n* = 34)	χ^2 = 2.67 ϕ = .16
Do police officers have to contact parents when they take their children to the police station? (yes)	88.0%	(*n* = 44)	82.0%	(*n* = 41)	χ^2 = .71 ϕ = -.08
Do police officers have to wait for a parent to arrive at the station before questioning a child? (no)	66.0%	(*n* = 33)	58.0%	(*n* = 29)	χ^2 = .49 ϕ = -.07
Do police officers have to tell parents if their children are being viewed as witnesses or suspects? (no)	10.0%	(*n* = 5)	12.0%	(*n* = 6)	χ^2 = .10 ϕ = .03
UPIQ Total Score	*M* = 4.26 (*SD* = 1.51)		*M* = 5.00 (*SD* = 1.12)		*t* = -2.78** *d* = -.56

** $p < .01$.

Note. Correct answers are provided in brackets following each UPIQ item.

2.3.2. Self-Reported False Confessions

Participants in both groups were asked if they had ever made a false confession to police by admitting guilt to a crime they had not committed. Unexpectedly, no significant differences between the groups emerged. However, youth reported making a high number of past false confessions, with nearly half of the combined sample (43.0%, *n* = 43) reporting at least one past false confession. Of these, more than two-thirds (67.4%, *n* = 29) reported being formally convicted of charge(s) as a result of their admission. Youth also reported a range of serious sanctions, including time spent in pretrial detention or custody (44.2%, *n* = 19), probation or other supervision orders (32.6%, *n* = 14) and community service (6.9%, *n* = 3). Youth were also queried about their reasons for providing a false confession and provided a number of responses that were largely consistent with reasons commonly reported in the literature. Nearly half (46.5%, *n* = 20) indicated they had confessed to protect a friend, one-quarter (25.6%, *n* = 11) felt their confession would result in an earlier release

from custody, and a smaller proportion (9.3%, *n* = 4) indicated feeling pressured by police to admit the crime. To determine which factors, if any, were predictive of youths' false confession history, we first examined bivariate associations (see Table 2.4) between a series of predictors (demographic characteristics, intellectual/academic abilities, and legal experience) self-reported false confession history in the full sample, and none emerged as significant in the present study.

2.3.3. Psycholegal Abilities Relevant to Police Interrogation and Trial

Rights Comprehension

In keeping with predictions, many participants in the FASD group demonstrated impaired understanding and appreciation of their arrest rights, including both the original warnings included in Grisso's instruments, as well as the Canadian warnings. Data summarized in Table 2.6 includes participants' performance by group on both the original Miranda warnings included in Grisso's instruments, as well as in the jurisdictionally combined format. The following describes results focusing on jurisdictionally adapted (combined) instrument scores for the CMR (CMR-C), CMR-R (CMR-R-C), and CMV (CMV-C) subtests (there is no jurisdictional modification on the FRI Instrument). By way of prefacing contrasts between the FASD and comparison group, Table 2.7 shows that comparison participants' performance across the instruments fell within the range of findings from several published studies examining adolescent rights comprehension in community and offending samples, as well as an adult sample of psychiatric patients. Overall, participants from the FASD group earned lower continuous total scores across the CMR-C, CMR-R-C, CMV-C, and FRI instruments, relative to youth in the comparison group. Results suggest youth with an FASD diagnosis had substantial difficulty understanding their rights, correctly paraphrasing the warnings, differentiating sentences with the same meaning on recognition items, and providing the correct definition on a variety of vocabulary items relevant to the warnings. Their overall appreciation was also substantially poorer than comparison youth across the three appreciation instruments.

Table 2.6. Performance on Grisso's Miranda Instruments

	FASD		Comparison		Analyses	
	M (SD)	***n* (% fail)**	**M (SD)**	***n* (% fail)**	**t**	**d**
CMR	4.86 (2.02)		6.30 (1.90)		-3.67***	-.74
Warning I		12 (24.0%)		6 (12.0%)		
Warning II		14 (28.0%)		4 (8.0%)		
Warning III		20 (40.0%)		10 (20.0%)		
Warning IV		4 (8.0%)		4 (8.0%)		
Cnd: Warning I		9 (18.0%)		4 (8.0%)		
Cnd: Warning II		15 (30.0%)		4 (8.0%)		
Combined CMR	6.96 (2.71)		9.18 (2.42)		-4.32***	-.87
CMR-R	9.26 (1.84)		10.62 (1.19)		-4.39***	-.89
Warning I		6 (12.0%)		1 (2.0%)		
Warning II		2 (4.0%)		1 (2.0%)		
Warning III		11 (22.0%)		2 (4.0%)		
Warning IV		6 (12.0%)		0 (0.0%)		
Cnd: Warning I		4 (8.0%)		3 (6.0%)		
Cnd: Warning II		3 (6.0%)		2 (4.0%)		
Combined CMR-R	14.28 (2.26)		15.74 (1.68)		-3.67***	-.87
CMV	5.74 (3.19)		8.20 (2.44)		-4.32***	-.87
Consult		14 (28.0%)		7 (14.0%)		
Attorney		9 (18.0%)		5 (10.0%)		
Interrogation		17 (34.0%)		6 (12.0%)		
Appoint		25 (50.0%)		6 (12.0%)		
Entitled		19 (38.0%)		11 (22.0%)		
Right		27 (54.0%)		12 (24.0%)		
Cnd: Lawyer		0 (0.0%)		3 (6.0%)		
Cnd: Proceeding		42 (84.0%)		31 (62.0%)		
Cnd: Ad. Sent.		8 (16.0%)		4 (8.0%)		
Cnd: App. Adult		12 (24.0%)		4 (8.0%)		
Cnd: Statement		11 (22.0%)		4 (8.0%)		
Combined CMV	11.28 (4.44)		14.82 (3.99)		-4.19***	-.85
FRI	21.50 (3.83)		23.57 (3.44)		-2.82**	-.57
NI	8.26 (1.90)		8.59 (2.10)			
RC	6.96 (2.19)		7.86 (1.76)			
RS	6.02 (2.07)		6.88 (2.21)			
GRI Total	41.36 (8.02)		48.71 (6.65)		-4.96***	-1.00
Combined GRI Total	54.02 (9.78)		63.35 (8.82)		-4.98***	-1.01

* $p < .05$, ** $p < .01$, *** $p < .001$

While interpretation of participants' performance in terms of continuous total scores for each instrument can be helpful in describing overall understanding, it is also legally necessary to demonstrate comprehension of each individual warning, as the failure to adequately comprehend a single warning prong may be sufficient to conclude an impairment in capacity is present (Grisso, 1998). A substantial number of participants with FASD

showed impaired comprehension across the instruments, in both absolute terms, as well in contrast with the comparison group. More than half of participants in the FASD group demonstrated impaired performance on the CMR-C instrument (defined as earning a 'zero' on one or more of the six warnings). They fared somewhat better on the relatively easier CMR-R-C instrument, with just over one-third demonstrating impaired understanding of at least one warning prong (defined as 2 out of 3 items incorrect). Finally, nearly three-quarters of participants from the FASD group showed impaired performance on the CMV-C instrument (defined as a score of zero on one or more vocabulary items).

Table 2.7. Comparison of Participants' Performance on Grisso's Miranda Instruments across Studies

	Current Study		Published Samples			
	FASD (*n* = 50)	**Comparison (*n* = 50)**	**Grisso's Juveniles[a] (*N* = 431)**	**Pre-Adjudicative Adolescents[b] (*N* = 152)**	**Community Adolescents[c] (*N* = 94)**	**Adult Psychiatric Patients[d] (*N* = 75)**
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
CMR	4.86 (2.02)	6.30 (1.89)	5.86 (1.85)	5.07 (2.19)	6.02 (1.81)	4.93 (2.58)
CMR-R	9.26 (1.84)	10.62 (1.19)	-	8.81 (1.99)	9.20 (2.08)	9.07 (2.12)
CMV	5.74 (3.19)	8.20 (2.45)	7.93 (2.62)	7.26 (2.80)	8.78 (2.54)	7.25 (3.20)
FRI	21.50 (3.83)	23.57 (3.44)	-	21.36 (4.61)	22.31 (3.39)	-
NI	8.26 (1.90)	8.59 (2.10)	9.09 (1.19)	9.14 (1.32)	8.99 (1.35)	8.46 (2.51)
RC	6.96 (2.19)	7.86 (1.76)	8.54 (1.70)	7.38 (2.19)	8.35 (1.70)	7.66 (2.52)
RS	6.02 (2.07)	6.88 (2.21)	5.52 (2.51)	4.91 (2.85)	4.95 (2.32)	5.36 (3.28)

[a] Grisso, 1998; [b] Viljoen & Roesch, 2005; [c] McLachlan, Roesch, & Douglas, 2011; [d] Cooper & Zapf, 2008.

Following administration of the rights comprehension instruments, participants were asked to provide a rating of their perceived level of understanding of their rights, as well as their confidence in making decisions about their rights. In spite of substantially more impaired performance across the rights comprehension instruments, participants with FASD provided similar mean ratings of both understanding (M = 3.83, SD = 1.05) and confidence about waiver decisions (M = 3.34, SD = 1.05) relative to the comparison group (M = 3.62, SD = 0.97 and M = 3.70, SD = 1.25, respectively). There was a positive association between examinees' ratings of their own understanding, and actual total comprehension scores on the combined instruments in both the FASD (r = .39, p = .007) and comparison groups (r = .52, p < .001), suggesting that in the aggregate, youth were relatively accurate in these self-assessments (these correlations were not significantly different). However, differences between the groups emerged in the confidence-accuracy relationship of their self-

assessments. Specifically, youth in the comparison group who earned better total comprehension scores on the combined instruments reported higher confidence regarding their ability to make informed waiver decisions (r = .65, p < .001). This relationship did not hold in the FASD group, suggesting their confidence judgments did not as accurately reflect their actual understanding and appreciation of their rights.

In order to examine predictors possibly associated with participants' rights comprehension scores, an initial analysis of associations was undertaken at the bivariate level between predictors (demographic characteristics, intellectual/academic ability, and legal experience) and participants' total scores on each of the combined Instruments (see Table 2.4). As anticipated, a number of significant associations was evident across the four combined Instruments following a Bonferonni correction, including participants' IQ and average grade reading level, as well as group (FASD vs. comparison) on the three understanding instruments (CMR-C, CMR-R-C, and CMV-C).

Next, a series of hierarchical multiple regressions (Table 2.8) was conducted to evaluate the independent contribution of each of these predictors in participants' scores on the four combined instruments. In keeping with hypotheses and past findings in the literature, participants' IQ emerged as a robust independent predictor across analyses on the four combined instruments. After controlling for IQ, average reading grade level scores were also significantly associated with participants' scores on the understanding instruments, including the CMR-C, CMR-R-C, and CMV-C. However, participants' group membership (FASD vs. comparison) did not remain a significant predictor of participants' performance on any of the combined instruments after controlling for the effects of IQ and reading ability. In general, youth with weaker intellectual and reading abilities, regardless of diagnostic group, experienced significantly more difficulty understanding and appreciating their arrest rights compared to participants with stronger skills in these areas. Finally, counter to hypotheses, participants' scores on the combined instruments did not show any significant associations with their earlier self-reported decisions to invoke the right to counsel, to consult with a parent or other adult, or to remain silent during police interview.

Table 2.8. Linear Regression Models Predicting Combined Scores on Grisso's Instruments

	Regression Coefficients			Model Statistics		
	B	*SE* B	*β*	Adj. R^2	ΔR^2	f^2
CMR-C						
Step 1: IQ	.57	.06	.66***	.43	.44***	.39
Step 2: Reading	1.45	.34	.41***	.52	.09***	.49
Step 3: Group	2.76	1.65	.13	.53	.01	.54
CMR-R-C						
Step 1: IQ	.12	.02	.53***	.27	.28***	.23
Step 2: Reading	.28	.11	.30**	.31	.05**	.28
Step 3: Group	.94	.52	.17	.33	.02	.32
CMV-C						
Step 1: IQ	.24	.03	.63***	.40	.40***	.67
Step 2: Reading	.66	.15	.42***	.50	.10***	1.00
Step 3: Group	.57	.75	.06	.49	.00	1.00
FRI						
Step 1: IQ	.13	.03	.42***	.17	.17***	.21
Step 2: Reading	.32	.16	.24	.19	.03	.27
Step 3: Group	.57	.79	.07	.19	.00	.27

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

Fitness to Stand Trial

Again, in keeping with predictions, participants in the FASD group earned significantly lower scores on the FIT-R (with lower scores reflecting a greater degree of impairment) across the three subscales, as indexed by FIT-R Total scores, F (3, 97) = 11.95, $p < .001$, $f^2 = 2.94$ (see Table 2.9).[2] Examination of FIT-R subscale scores revealed a similar pattern with participants in the FASD group demonstrating considerably more difficulty understanding elements of the arrest and trial process, appreciating their involvement and the possible consequences of the proceedings, and adequately participating in their defense through appropriate communication with counsel, than comparison participants (Table 2.10). By way of external reference, participants in the comparison group earned scores that were comparable with a study published by Viljoen and Roesch (2005).

[2] As earlier described, location differences in these scores emerged, such that participants in the comparison group from British Columbia earned higher scores compared to those from Manitoba. Group differences remained significant after controlling for location effects.

Table 2.9. Multiple Linear Regression Models Predicting FIT-R Subscale Scores

	Regression Coefficients			Model Statistics		
	B	***SE* B**	***β***	**Adj. R^2**	**ΔR^2**	**f^2**
Understanding						
Step 1: IQ	.13	.02	.57***	.32	.32***	.47
Step 2: Reading	.46	.10	.48***	.44	.13***	.82
Step 3: Group	1.05	.46	.19*	.46	.03*	.92
Appreciation						
Step 1: IQ	.06	.01	.50***	.25	.25***	.33
Step 2: Reading	.17	.06	.31**	.30	.05**	.45
Step 3: Group	.32	.30	.10	.30	.01	.47
Communication						
Step 1: IQ	.10	.02	.42***	.17	.18***	.22
Step 2: Reading	.24	.11	.25	.20	.03	.28
Step 3: Group	1.435	.55	.26*	.24	.05*	.37

* $p < .03$, ** $p < .01$, *** $p < .001$.

Note. $N = 100$.

Participants' performance on the FIT-R can also be evaluated by examining scores falling above and below a given cut-off point. Past investigators using the FIT-R and/or similar methodologies have used a cut-off of two standard deviations below the norms on the FIT-R and other measures (Grisso & Appelbaum, 1995; Viljoen & Roesch, 2005; Viljoen & Zapf, 2002). Accordingly, the following scores were classified as impaired on the FIT-R subscales: $\leq$ 8 on Understanding, $\leq$ 2 on Appreciation, and $\leq$ 8 on Communication with Counsel (based on the adult normative sample). A significantly higher proportion of youth from the FASD group earned scores two or more standard deviations below adult norms on all three FIT-R subscales (after controlling for location on the Understanding scale): In total, 76.0% of youth in the FASD group ($n = 38$) demonstrated impaired performance on the Understanding scale, vs. 28.0% of comparison participants ($n = 14$), χ^2 (1, $N = 99$) = 23.08, $p < .001$, $\phi = -.48$. Though fewer youth overall earned scores below the impairment cut-off on the Appreciation scale, significantly more youth from the FASD group (24.0%, $n = 12$) were nonetheless classified as "impaired" relative to the comparison group (4.0%, $n = 2$), $\chi^2(1, N = 99) = 8.31$, $p = .004$, $\phi = -.29$. Similarly, 24.0% ($n = 12$) of the FASD group earned scores below the cut-off on the Communication scale, compared to 4.0% ($n = 2$) of the comparison group, $\chi^2(1, N = 99) = 8.31$, $p = .004$, $\phi = -.29$.

Table 2.10. Performance on the Fitness Interview Test—Revised

Fitness Interview Test	FASD		Comparison		Analyses
	M	SD	M	SD	
Understanding	6.94	2.61	9.48	2.25	$F = 11.49^{***}$ $f^2 = 1.27$
Appreciation	4.04	1.75	5.08	1.16	$t = 3.51^{**}$ $d = .71$
Communication	9.66	3.02	11.94	1.87	$t = 4.53^{***}$ $d = .91$
FIT-R Total	20.64	6.05	26.50	4.43	$F = 11.95^{***}$ $f^2 = 2.93$

** $p < .01$, *** $p < .001$. $N = 100$.

Note. FIT-R scores are reverse coded, such that higher scores indicate better performance on each scale (original scoring for each item is the reverse where higher scores indicate more impaired performance).

In order to examine predictors possibly associated with participants' FIT-R scores, an initial analysis of associations was undertaken at the bivariate level between predictors (demographic characteristics, intellectual/academic ability, and legal experience) and participants' continuous scores on each of the FIT-R subscales (see Table 2.4). In keeping with bivariate patterns of association found on Grisso's combined instruments, participants' IQ, reading ability, and study group were all significantly associated with the three FIT-R subscale scores. Next these three predictors were included in a series of hierarchical regression models to examine their independent contribution to participants' scores on the FIT-R subscales (see Table 2.9). Overall, participants' IQ once again emerged as a robust independent predictor across analyses on the three FIT-R subscales. After controlling for IQ, average reading grade level scores were also significantly associated with participants' scores on the Understanding and Appreciation subscales, but not on the Communication subscale after a Bonferroni correction for multiple comparisons. Interestingly, participants' group membership also remained a significant independent predictor of participants' scores on the Understanding and Communication subscales, suggesting that some aspect of the FASD diagnosis contributed to raters' evaluation of youth on these indicators. Otherwise put, youth with FASD were significantly more likely to earn impaired scores with respect to their ability to understand key aspects of the arrest and trial process (Understanding) and participate in their defense (communicate with counsel) relative to their non-diagnosed peers, and this effect was independent of youth's IQ or reading ability.

2.4. Discussion

In spite of growing concerns from legal and clinical commentators about the overrepresentation and risk for miscarriages in justice for youth with FASD, little empirical

evidence is available to inform policy decisions. The present study examined three main areas relevant to procedural justice for youth with FASD, namely, past interrogation and confession experiences, psycholegal abilities relevant to police interrogation and waiver decisions, and fitness to stand trial. The primary focus of this research was to better understand the experiences and capacities of youth with FASD as they navigate formal criminal justice procedures. Self-report and forensic assessment instruments were employed to address these questions in a sample of FASD and comparison youth in two Canadian provinces. As a group, youth with an FASD diagnosis demonstrated substantial limitations in both the accuracy of their legal knowledge, as well as in their psycholegal capacities in the context of police interrogation and adjudication.

2.4.1. Primary Findings

In order for young people to benefit from the extended procedural safeguards they are afforded under the law, they must be able to understand and meaningfully apply knowledge about their rights in the context of arrest and police interrogation. Unfortunately, a large proportion of youth with FASD showed impaired comprehension of their arrest rights. These results support the suggestion that many youth with FASD are likely at increased risk of having insufficient understanding to provide a valid waiver when prompted to do so by police without substantial efforts to clarify their meaning and relevance. Though Canadian police officers are charged with the proactive responsibility of identifying youth who may have vulnerabilities in this area and address any limitations, it remains unclear whether they have the necessary training or skill to accomplish this task (e.g., Owen-Kostelnik & Reppucci, 2009).

Many youth with FASD also showed serious limitations in their knowledge and appreciation of all aspects of the adjudicative process, including their understanding of criminal procedure, appreciation of the nature and object of the legal proceedings, and ability to communicate with counsel. Kalbeitzer (2008) cautions that despite the important contribution of defendants' cognitive capacities in determining their psycholegal abilities, these deficits may not receive the same attention from evaluators as serious psychopathology, such as psychosis, perhaps owing to their relatively compliant and cooperative nature. The same might be said for youth with FASD, who present with what are often termed an invisible deficits (Streissguth et al., 1996). Certainly, a young person with PAE may not demonstrate flagrant symptoms of mental illness, such as poor orientation or

appreciation of the trial process that is delusional in nature. However, they are considerably more likely to present with limitations in cognitive capacities, coupled with behavioural challenges such as impulsivity, poor attention, and limited interpersonal sophistication that combined, increase their risk of meeting the threshold of a finding of unfitness in court. The current findings speak to the need to carefully assess these capacities in young defendants with an FASD diagnosis, particularly in light of the growing frequency with which courts are dealing with the issue of FASD in fitness to stand trial determinations (Roach & Bailey, 2010).

In examining risk factors that may be associated with participants' limited psycholegal abilities, IQ and reading comprehension emerged as robust predictors across nearly all indicators measured. This result is also consistent with a large body of literature highlighting the importance of these factors (e.g., McLachlan et al., 2011; Viljoen & Roesch, 2005, see Table 2.2). However, this finding held for both the FASD and comparison groups, suggesting that youthful suspects with limited intellectual capacity or academic skills are more likely to experience challenges competently navigating the arrest and trial process, irrespective of the etiological roots of these deficits. Alternatively, the FASD diagnosis did appear to play an important role in participants' understanding of the legal process and their ability to communicate adequately with counsel, such that youth with an FASD diagnosis appeared to experience challenges above and beyond those directly stemming from global intellectual dysfunction or academic limitations. This finding makes sense, in light of the significant neuropsychological and behavioural deficits frequently observed in this population, such as difficulty presenting verbal information in an organized fashion, limited attention span, and trouble understanding complex and abstract concepts, amongst a myriad of other difficulties. It is possible that this finding emerged in relation to trial-related capacities, but not rights comprehension, because the FIT-R allows raters to make a more holistic judgment of an individual's limitations via a structured professional judgment approach to rating items. While the FIT-R allows raters to take multiple factors into consideration, such as participants' communication and attention skills at the item level, Grisso's instruments provide a strictly objective measurement of the presence or absence of correct knowledge, along with an individuals' ability to correctly apply that knowledge. From a clinical perspective, this result underscores the importance of undertaking a comprehensive evaluation with respect to any set of psycholegal abilities in the context of a forensic assessment.

In spite of substantial difficulties, it is important to highlight the fact that not all youth with an FASD diagnosis demonstrated impaired understanding and appreciation of their rights or trial-related knowledge and abilities. Indeed, many earned scores that supported relatively sound skills in the various areas measured. These findings highlight the variability in skill level demonstrated by youth with an FASD diagnosis, and are consistent with research that underscoring the heterogeneity of legal skill in adolescents generally (e.g., McLachlan et al., 2011; Viljoen & Roesch, 2005). Thus, while police, lawyers, and clinicians should be mindful of their increased vulnerability in these domains, it is important to nevertheless undertake an individualized approach when assessing the abilities of a young person who has an FASD diagnosis during (or following) the arrest, interrogation, or adjudication process. This also remains an important distinction in the face of recent policy suggestions advocating for specialized accommodations for individuals with FASD under the *Criminal Code of Canada* (e.g., Canadian Bar Association, 2011; Spencer, 2011). Future research measuring the neuropsychological correlates and applied decision-making skills of youth with FASD in the context of rights comprehension and waiver decisions would yield important information to address these more specific causal questions.

Notwithstanding the many challenges described, youth with FASD shared a number of similarities with adolescents comprising the comparison group. For instance, they reported parallel past experiences in terms of their most recent police interview, and counter to predictions, also appeared to invoke their rights at comparable rates. This finding was particularly interesting in light of substantially higher limitations in comprehension, as it is often presumed that a person who has better understanding and appreciation of their legal protections will be able to make better decisions about their rights. It is possible that other factors better accounted for youths' decision-making in the context of police interrogation, particularly given that none of the hypothesized predictors appeared related to their waiver decisions in the present study. For instance, in spite of difficulty understanding and explaining their rights in an academic sense, it is possible that youth both with and without an FASD diagnosis who have extensive criminal justice experience, such as those in the present study, develop a legal street-wise with respect to the application of these legal protections in the interrogation context. This theory would be consistent with Leo's (1996) finding that individuals with criminal justice experience are more likely to invoke their rights compared to those with no prior felony record. Anecdotally speaking, many participants highlighted the importance of never speaking with police during an investigation. While this

"rule of thumb" approach was not necessarily based on a nuanced application of reasoning within the young person's individual circumstances, following this tactic in each investigation would nonetheless result in what most would consider a prudent decision for any person suspected of a crime (Kassin & Norwick, 2004).

It is of particular concern that a large proportion (more than 40%) of youth from both groups reported a history of making at least one past false confession, many of which resulted in serious sanctions. This rate is somewhat higher than previously published findings in youth (e.g., Redlich et al., 2010; Sigurdssson & Gudjonsson, 2001).One possibility for this departure may reflect respondents' tendency to falsely take responsibility for a crime in the context of entering a guilty plea, rather than face trial, a practice that is very common in the Canadian justice system (Piccinato, 2009). Indeed, some participants had difficulty differentiating the concept of pleading guilty during the adjudicative process, versus entering a false statement about their guilt during an actual police interrogation.

Most confessions appeared voluntary in nature, on the basis of participants' reasoning for providing the false confession. The most common reasons provided appeared to be the result of a logical, albeit concrete and short-sighted, decision-making process, including confessing to protect a peer, or to secure earlier release from custody or faster processing of charges. This reasoning is certainly reflective of research emphasizing the extent to which even typically developing adolescents show limited psychosocial maturity in the context of decision making. That said, the youth in this study reported frequent gang involvement, lending greater validity to their concerns regarding the importance of taking responsibility for a crime to protect another friend or family members. Additionally, youth court processing times in Canada can be very slow, resulting in lengthy pre-trial detention while awaiting trial (Doob & Sprott, 2004; Greene, Sprott, Madon, & Jung, 2010) and thus may increase the appeal of doing what is necessary to secure an earlier release from custody. In the face of such practical realities, these decisions may not seem unreasonable or unwise in light of the rapid pace of change during this short period of development. In the end, it was surprising to find that youth with FASD were not more likely to report having provided a false confession, given the fact that they are often thought to have limitations above and beyond those ascribed to typical adolescent development. Nevertheless, these results emphasize the fact that police need to be particularly cautious when accepting confession-based evidence from any adolescent suspect.

A final and important result to highlight centers on the limited awareness youth with an FASD diagnosis demonstrated with regard to their level of rights comprehension. Indeed, the present findings lend mixed support to speculation from clinical and legal experts about whether youth with an FASD diagnosis have sufficient insight to make decisions about their rights (e.g., Conry et al., 2000). While participants with FASD were fairly accurate assessing their own level of rights comprehension, results diverged with respect to their confidence ratings. Unlike their non-PAE peers who reported lower confidence levels when they showed higher impairment in comprehension, the FASD groups' self-reported confidence levels were unrelated to their actual (or perceived) ability level in this area. Thus, in spite of many youth in the FASD sample showing compromised understanding and appreciation of their rights (and at least some insight into these difficulties), they tended to feel more confident about their own decision-making abilities than was in fact warranted. In real world contexts, this could result in youth making poor decisions based on limited understanding of their rights, with misplaced confidence that may be expressed to police. Police and other legal professionals would benefit from exercising caution when evaluating a suspects' own confidence level about his or her rights understanding during the waiver procedure if they have an FASD diagnosis.

2.4.2. Limitations and Future Directions

This research was not without limitations. In particular, this study evaluated adolescents' *current* interrogation and adjudication-related psycholegal abilities using standardized instruments. While we adapted Grisso's instruments to account for the substantive legal content relevant in the jurisdictions sampled, the specific wording and complexity of warnings provided to youth have been shown to vary dramatically between police forces (e.g., Rogers, Hazelwood, Sewell, Shuman, & Blackwood, 2008). The assessment also focused on youth's current understanding and appreciation of their arrest rights under ideal conditions, not their understanding at the time of arrest. During the interim, youth may have learned about what they should have done during their arrest, suggesting current knowledge may be quite different from knowledge at the time of their last interrogation warning. A more ecologically valid scenario would include having youth apply their rights to their own current legal situation, under the additional potential pressures inherent in police interrogations (such as pressure to provide the waiver, or self-image bravado aimed at "looking" competent to avoid "losing face"). On the whole, criticisms such as these, and others frequently levelled against the use of Grisso's instruments to evaluate

these psycholegal abilities, suggest the present results reflect youths' understanding and appreciation in the best of circumstances. Given that many youth with FASD demonstrated severely compromised comprehension of their rights, caution should be exercised in extending these results to the real world, where we might expect the additional cognitive and social load to only further impair their rights comprehension and waiver decisions.

In a related vein, the present study did not address whether participants with an FASD diagnosis were unfit to stand trial at the time of their assessment. Rather, the methodology evaluated the psycholegal abilities necessary to make a determination of a young person's capacity to understand and appreciate the nature and object of their own legal proceedings, and to communicate with counsel. In rating FIT-R items, evaluators must take into consideration many skill domains, including knowledge, reasoning, and even psychopathology such as inattention or inability to communicate during the assessment. However, the current study did not explicitly assess manifestation of psychiatric symptomatology or measure specific cognitive deficits (beyond overall IQ). Importantly, these domains must be carefully assessed and linked with deficits in psycholegal abilities prior to rendering a clinical or legal decision about fitness. In addition, many youth in this study were post-adjudication and asked to reflect on their most recent charges and ensuing legal proceedings, rather than their current situation. Overall, it is important to highlight the fact the present findings do not directly address the question of participants' current fitness determination, and as already advised, forensic evaluators are reminded that a more comprehension evaluation is required to draw a firm conclusion regarding participants' current psycholegal abilities.

Participants *past* interrogation experiences and self-reported false confession history were evaluated using self-report methodology. This approach carries a number of inherent limitations, including primarily, questions around the reliability of reports. Youth with FASD are frequently described as having poor insight and difficulty with memory that could have further impacted the validity of their own reports (e.g., Kodituwakku, 1997). It is certainly possible that similarities in reported histories between the two groups were partly the product of either under- or over-reporting, as a result of poor recall of their past experiences, poor insight into their decision making processes, or even difficulty understanding the questions posed by evaluators. Other more objective methods, such as coding archival transcripts, would lend more support to the current findings. In addition, youth were only asked to report on their most recent police interrogation experience and to describe a single

false confession. It is also possible their most recent or single experience does not provide a valid reflection of their overall past experiences in these domains, and thus a more comprehensive assessment is recommended.

Lastly, raters' were not blinded to participants' diagnostic status. This was seen as impractical for a number of reasons, including the fact that In most cases, the overt behavioural and cognitive challenges demonstrated in the FASD sample would have cued raters' to their group membership. Participants in the FASD sample were also expected to experience difficulty remembering and attending appointments, and as such, clinical liaison staff at the diagnostic agencies from which this sample was recruited were often involved in facilitating interviews. Nevertheless, it is possible that raters' knowledge of participants' diagnostic status introduced a possible source of bias in the present study. Their knowledge of FASD and commonly associated deficits may have led them to perceive those youth as having more impairment across domains, or conversely, to have seen the non-PAE youth as demonstrating relatively fewer deficits. The fact that both Grisso's Instruments and the FIT-R use objectively anchored scoring systems may have helped in reducing any potential bias, and also excellent interrater reliability scores lend further confidence to the validity of the present findings. However, future studies would benefit from employing methods that further decrease this potential source of bias. This might include efforts to blind participants by having them also meet with other youth who have similar behavioural and cognitive difficulties (such as youth with intellectual disability or known psychiatric difficulties).

2.4.3. Implications and Conclusions

This study reflects the first attempt to empirically evaluate the psycholegal capacities of youth with an FASD diagnosis who are involved in the criminal justice system. These findings highlighted a high degree of deficit across areas measured, and can be used to help inform the direction of future policy decisions, as well as training and education for clinical and legal professionals working in forensic and correctional settings. An interesting question arises when considering appropriate avenues for remediation of these deficits in this population. Research examining adolescents' ability to benefit from remediation efforts focused on improving their *knowledge* in regards to the legal process, suggests that typically-developing young people likely have the capacity for improvement in this domain either through teaching (e.g., Viljoen, Odgers, Grisso, & Tillbrook, 2007) or time spent with counsel (e.g., Viljoen & Roesch, 2005). This is key because if a young person has current

legal deficits that are deemed easily addressed through education and/or coaching, he or she would likely be found fit to proceed to trial (Grisso, 2003; Melton, Petrila, Poythress, & Slobogin, 2007). Unfortunately, the extent to which youth with an FASD diagnosis may benefit from this type of teaching or support remains questionable, as they often present with significant deficits in learning ability (Kodituwakku, 2007). Nevertheless, youth with FASD may benefit from extra time and effort on the part of legal counsel or judges in explaining important concepts related to their case and court procedures. Intervention recommendations to benefit from these strategies and optimize learning in this population might include using simple language, repeating information, ensuring their attention is captured prior to presenting information, gauging comprehension frequently to assess adequacy of learning, and using applied or multi-modal methods of presenting information (see Davis et al., 2011 for a complete review).

When impairments are based more squarely on a young person's ability to appreciate or communicate relevant information, remediation needs may be more complex. Even in community samples, at least one research team has had poor success in showing improvements in these capacities using classroom-based teaching interventions (e.g., Kalbeitzer et al., 2008). The problem also becomes compounded when considering a young person's capacity to benefit from treatment and/or remediation efforts targeting deficits thought to be the product of organic brain injury, such as in the case of FASD. Under even relatively conservative Canadian fitness standards, impairments resulting from cognitive deficits associated with the FASD diagnosis may be sufficient to render a finding of unfitness. Unfortunately, this raises the question of how best to handle a young defendant with FASD who is found unfit to proceed with trial. Administration of psychotropic medication remains the most frequently employed form of intervention in remediating a defendants' ability to stand trial competently (Zapf & Roesch, 2011) though this may not be an appropriate option in the case of deficits stemming from cognitive impairment. These concerns highlight the risks associated with triggering a fitness assessment and findings of incapacity that do not result in a stay of proceedings, including the possibility of indeterminate detention or supervision conditions for individuals with an FASD diagnosis (Roach & Bailey, 2010).

Overall, youth with an FASD diagnosis demonstrated a number of significant limitations with respect to their abilities across psycholegal skills measured. Because this study was the first of its kind with a vulnerable population that can be difficult to access, the

approach undertaken emphasized gathering a breadth of information across a number of important areas. By way of a trade-off, only a limited exploration of the possible reasons underlying these difficulties was possible. While the various neurobehavioural and neuropsychological deficits frequently associated with the diagnosis make for a compelling explanation, a lack of specific information about *why* youth experienced such challenges limits the extent to which empirically-informed solutions can be designed and implemented. For instance, if brain-based deficits, including neuropsychological impairments, are closely associated with limits in youths' psycholegal abilities, programs designed to teach understanding and appreciation may yield limited success in ameliorating such deficits. In this instance, a better alternative may be to implement policies that would make the provision of external supports more readily available to suspects or defendants with similar needs. Further research taking a more in-depth analysis of this issue would certainly help to inform the development of interventions designed to improve this population's ability to benefit from procedural protections afforded to all Canadians under the law.

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3. Evaluating the Criminal Offending Histories, Risks, and Needs of Youth with FASD

3.1. Introduction

Individuals with a diagnosis of fetal alcohol spectrum disorder (FASD) experience adverse life experiences at high rates. Arguably, one of the most salient and consequence-laden of these experiences involves coming into contact with the criminal justice system. From an institutional perspective, the Canadian justice system appears strongly impacted by the diagnosis, with prevalence estimates ranging upwards from 10.0% to 23.9%, suggesting significant overrepresentation of youth and adults in correctional settings (Burd, Selfridge, Klug, & Juelson, 2003; Fast, Conry, & Loock, 1999; MacPherson & Chudley, 2006). Further compounding this problem, offenders with FASD are often described by legal and clinical professionals as becoming trapped in a revolving door phenomenon, driven by frequent recidivism and difficulty complying with formal sanctions (Byrne, 2002; Conry & Fast, 2000; Moore & Green, 2004). In spite of such observations, research has yet to empirically examine these issues. Thus, little is understood about this population's offending patterns or risk for engaging in delinquent and illegal behaviour. The present study aimed to fill this knowledge gap by comparing the criminal justice experiences of youth with an FASD diagnosis, as well as risk and protective factor profiles associated with prospective offending, relative to a group of justice-involved comparison youth without a history of prenatal alcohol exposure (PAE). Importantly, this research sought to identify similarities and differences between the groups to better inform risk management practices, thereby achieving a reduction in risk and better outcomes for youth with FASD.

The risk-need-responsivity model (RNR), first introduced in 1990 (Andrews, Bonta, & Hoge) has become a highly influential approach in the assessment and treatment of offenders (Blanchette & Brown, 2006; Ward, Mesler, & Yates, 2007). This approach also provides a helpful lens through which the offending patterns, risks, and needs of youth with an FASD diagnosis in the justice system may be better understood. Importantly, the model

comprises three principles key to designing effective intervention and management approaches aimed at reducing risk in young offenders. These include: understanding an individual's risk level (*risk principle*), the nature of his or her criminogenic needs (also called dynamic risk factors, referring to the *needs principle*), and implementing intervention programs appropriately matched to a young person's ability level (*responsivity principle*, Andrews & Bonta, 2006). Unfortunately, a systematic lack of knowledge concerning these factors in youth with FASD limits our capacity to intervene and effectively assist these youth in managing their risk and reducing adverse outcomes.

3.1.1. Risks and Needs

A large body of empirical research has identified critical risk and protective factors related to youth offending (DeMatteo & Marczyk, 2005). Under a biopsychosocial model of risk, these indicators span a variety of psychological, biological, behavioural, and social domains. They can be further grouped by multiple ecological levels of influence, including individual factors (e.g., early aggression, age at first criminal adjudication, number of prior arrests, substance abuse, low IQ, impulsivity, hyperactivity); school- and peer-level factors (e.g., academic failure, frequent absences, multiple school transitions, antisocial peer influence); familial factors (e.g., poor family adjustment, childhood maltreatment and abuse; low levels of parental involvement, parental criminality); and community factors (e.g., socioeconomic status; community disorganization and crime levels) (for reviews, see DeMatteo & Marczyk, 2005; Farrington & Loeber, 2000). The field also recognizes that adolescence is a time characterized by ongoing physical and psychosocial development, making the stability of risk factors potentially less stable than patterns seen in adults (Borum, 2000; Borum & Verhaagen, 2006). This is also likely true, in principle, for youth with FASD who continue developing in some areas. However, the extent to which PAE leads to permanent or organically based deficits in neurobehavioural functioning may limit development and psychosocial maturation (see Davis, Desrocher, & Moore, 2011, for a review of deficits).

Significant overlap can be seen between the neurobehavioural deficits and adverse life experiences often seen in youth with FASD, and the risk/need factors associated with juvenile delinquency in the general population. These include high levels of both "static" risk factors, or, characteristics and experiences that are associated with negative outcomes but not subject to change, as well as "dynamic" factors, or, factors at the individual and

contextual level that are significantly related to future antisocial behaviour and subject to change. Factors may be considered static if they occurred in the past and are no longer an influence in a young person's current context, whereas factors that characterize a young person's history, but are ongoing, may be considered dynamic in nature. From a historical point of view, youth with an FASD diagnosis are often raised in environments marked by chronic stress and disorganization (e.g., high rates of early caregiver disruption and apprehension, exposure to violence and abuse, inadequate care and neglect, and having parents or other family members who are themselves involved in the justice system) (Streissguth, Barr, Kogan, & Bookstein, 1996). Their clinical presentation often includes both historical and/or ongoing mental health problems including frequent hospitalizations and suicide attempts, as well as early behavioural problems in childhood including impulsivity, lying, stealing, etc. (Famy, Streissguth, & Unis, 1998; O'Connor et al., 2002; Rasmussen & Wyper, 2007; Streissguth et al., 1996). Additional difficulties include significant problems with substance abuse, school failures, anger management problems, care environments marked by poverty, difficulty relating cause and effect, and problems with perspective taking (often described as poor empathy), amongst a myriad of other factors (Conry & Fast, 2000; Streissguth et al., 1996).

Protective factors represent a third type of marker receiving increasing attention across the risk literature (Borum, Lodewijks, & Forth, 2010; Deruiter & Nicholls, 2011; Ullrich & Coid, 2011). Generally speaking, protective factors are thought to either directly reduce, or moderate, a young person's level of risk, such that when multiple protective factors are present, a young person's level of risk may be buffered, thereby lowering the likelihood of reoffending (Turner, Hartman, Exum, & Cullen, 2007; Werner & Smith, 1992). In general, the present study focused on factors that are associated with lower risk for offending. Examples include factors such as high intelligence, self-esteem, problem-solving ability, and strong social support. Discussions around the development of pre-existing strengths and resilience, such as protective factors, are also becoming more popular as a point of focus in the FASD literature, owing to the stark level of deficit and need frequently identified in youth with FASD (e.g., British Columbia Ministry of Children and Family Development, 2008; Streissguth et al., 2004). Unfortunately, the overlap between known protective factors in adolescent offenders, and youth with FASD is less obvious. This reflects an important area for further study, as an improvement in our capacity to build on already existing strengths may serve a critical role in the development of intervention programs designed to target risk.

In all respects, youth with FASD appear to present, as a group, with a high level of risk and needs associated with antisocial behaviour and offending risk. While little is known about the specific nature of the developmental pathways that lead to antisocial and criminal behaviour in this population, a myriad of hypotheses have been proposed. At the most basic level, early theories implied a direct causal chain linking alcohol exposure, the ensuing neurobehavioural deficits, and antisocial behaviour (e.g., Byrne, 2002). More explicit models have also been proposed with Attention Deficit Hyperactivity Disorder (ADHD) implicated as a common mechanism underlying delinquent behaviour (e.g., Boland, Burrill, Duwyn, & Karp, 1998). However, theories such as these ignore the complex contributions of epigenetic factors and post-natal environmental experiences in antisocial behaviour. Given our knowledge about the prevalence of such difficulties in this population, the concepts of both equi-finality and multi-finality (Cichetti & Rogosch 1996) may prove useful in framing explanatory models in the formulation of risk trajectories for youth with FASD. Simply put, the principal of equi-finality emphasizes the observation that the same end-state or outcome can be reached via a variety of etiological conditions and differential environmental processes. While PAE may reflect a potentially important risk factor in the eventual determination of an individual's criminal behaviour, the justice system is replete with offenders who do not have a history of PAE. Further, not all individuals who have PAE go on to offend, lending weight to the concept of multi-finality, or the notion that any single etiological factor can lead to many different outcomes, depending on the person and context. While it seems likely that PAE plays an important role in the developmental trajectories of many young people with FASD who go on to become enmeshed in the justice system, it is critical that discussions around the conceptualization of risk consider factors within multiple pathways.

3.1.2. Responsivity

The principle of responsivity may arguably form the most important component of intervention plans in youth with FASD. Much like other populations of offenders with limited cognitive capacities, the neurobehavioural deficits associated with PAE may limit their ability to benefit from traditional correctional approaches (Burd, Fast, Conry, & Williams, 2010; Verbrugge, 2003). The principle of responsivity dictates that empirically supported methods of addressing risks and needs are necessary to achieve a reduction in risk. Further, these must also be responsive to the learning styles of offenders. Unfortunately, little research has been conducted evaluating the appropriateness of traditional cognitive-behavioural and

group-based treatments most often used in correctional settings for youth with an FASD diagnosis. As a group, youth with FASD are more likely to present with significant learning difficulties and other neurobehavioural characteristics including overall poor cognitive function, deficits in attention and impulsivity, problems with executive functions, and difficulty applying learned knowledge in practical settings (Davis et al., 2011; Rasmussen, Andrew, Zwaigenbaum, & Tough, 2008). Quickly, it becomes apparent that traditional programming may not be accessible to youth with this diagnosis, much the same as offenders with other intellectual disabilities (e.g., Hayes, 2004; Jones, 2004; Wilcox, 2004). They may also have substantial difficulty conforming to the demands of community-based management approaches frequently seen in less-restrictive sentences, such as the use of strict conditions designed to structure their behaviour in the community (Conry & Fast, 2000). While the present study did not undertake a direct examination of neuropsychological and behavioural factors likely influential in the responsivity of youth with an FASD diagnosis, consideration of this aspect of the RNR model is discussed in light of their risk and needs patterns.

3.1.3. Risk Assessment

Following the RNR framework, the treatment of a high-risk young offender, such as one with an FASD diagnosis, may necessitate more intensive resources than a low-risk offender (Borum, 2003). Risk assessment has emerged as an important evidence-based method of evaluating how to process youth through the justice system with increased reliability. In theory, evaluating youth from this perspective offers the practical benefit of being able to divert those with low risk/need levels from extensive contact with formal justice measures, while focusing more intensive supervision and management strategies on high risk offenders (Dowden & Andrews, 1999). Given that treatment resources are often very limited, increased knowledge about particularly salient risk factors associated with offending in adolescents with FASD has the potential to help clinicians, courts, and correctional administrators know how best to utilize resources so that the most intensive services are delivered to those who pose the highest degree of risk.

A well-conducted risk assessment should assist an evaluator in determining salient criminogenic risks and needs that require targeted intervention. Therefore, an important goal of building a knowledge base of risk factors related to offending in youth with FASD should translate into improvements in clinicians' abilities to make informed recommendations regarding how to manage and prevent risk (e.g., Viljoen, Elkovitch, & Ullman, 2007). Over

the past decade several promising risk assessment tools have been designed to evaluate the presence of risk/need and protective factors in youth, including the Structured Assessment of Violence Risk in Youth (SAVRY; Borum, Bartel, & Forth, 2003), and the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge, Andrews, & Leschied, 2002). While not explicitly developed as a risk assessment tool, the Psychopathy Checklist—Youth Version (PCL-YV; Forth, Kosson, & Hare, 2003) has also been found to show moderate associations with violent and general recidivism (Edens & Campbell, 2007; Edens, Skeem, Cruise, & Cauffman, 2001), and is thus frequently used in the process of youth risk assessment. Unfortunately, none of these tools are presently validated for use in youth with FASD. Use of these tools is potentially problematic given that the constellations of risk and protective factors in youth with FASD may differ from the general population on which these tools were initially developed. Recommendations about a young person's risk (and resulting management approaches) that are not empirically supported have the potential to be ineffective or even harmful in treating any young offender, particularly one with a complex pattern of deficits (Verbrugge, 2003; Viljoen et al., 2007). Information regarding the appropriateness of using these tools in the forensic context is also important, given that they are likely to be used with growing frequency in evaluations with important legal implications.

3.1.4. The Present Study

This study was conceptualized as the first step in a program of research focusing on better understanding the overrepresentation and risk patterns of youth with FASD in the criminal justice system. Modeling more detailed developmental pathways associated with antisocial and criminal behaviour in this population would require large-scale population-based longitudinal study. This approach was not deemed feasible as a first step in youth with FASD, given the lack of information available to frame these important questions. Thus, the current study sought to develop a multifaceted knowledge base focusing on the historical and prospective criminal justice system experiences, risks, and needs of a single cohort of youth with FASD involved in the justice system. Importantly, a comparison group of youth was recruited to serve as a point of reference against which to gauge patterns demonstrated by participants with FASD. The decision to include a comparison group of Canadian youth involved in the justice system was informed, in part, by feedback from FASD community stakeholders who felt that findings anchored in this respect would yield a more accurate reflection of the histories, risks, and needs of youth with an FASD diagnosis.

While many approaches to the measurement of risk and protective factors are available, the present study evaluated these variables using coding schemes included in the aforementioned risk assessment instruments. This method was selected for a number of reasons. First, the individual items included in each tool comprise risk and protective factors that have demonstrated robust associations with increase rates of violent and general recidivism in youth. A second objective of this research sought to examine the appropriateness of using youth risk assessment tools in this population, including the SAVRY, YLS/CMI, and PCL-YV, by assessing their predictive validity. Another important goal of this study aimed to provide useful information to ground-level service providers and policy decision-makers for the purpose of shaping practices in this population. As such, using these tools provided an opportunity to provide feedback to clinicians about the real-world applicability of conceptualizing risk from within this framework in youth with FASD.

Several specific research questions and hypotheses were addressed by this study:

- Do the criminal justice histories of youth with an FASD diagnosis differ from non-PAE young offenders? *Hypotheses*: Given estimated overrepresentation rates of youth with FASD in correctional and forensic settings, it was anticipated that their offending histories would be marked by earlier and more frequent offending behaviours. Differences in overall crime severity or offending patterns with respect to the frequency of particular constellations of charges were not anticipated. However, it was hypothesized that youth with an FASD diagnosis would have more difficulty adhering to supervision conditions, and would thus accrue significantly more formal charges resulting from breaching the conditions of bail or probation orders.
- Do the risk/need and protective factor profiles in youth with FASD differ from non-PAE young offenders? *Hypotheses*: It was anticipated that youth with FASD would show significantly higher levels of risk factors and clinical needs across contexts, as well as fewer protective factors relative to non-PAE youth.
- What is the predictive validity of the SAVRY, YLS/CMI, and PCL-YV, in terms of each instruments' association with future general recidivism in youth with FASD? *Hypotheses*: It was anticipated that these risk tools may poorly differentiate high risk youth with an FASD diagnosis, given the substantial level of risks and needs expected to be present in this population, and lack of guidance with respect to neurobehavioural deficits to aid raters' in rendering risk decisions.

3.2. Method

3.2.1. Participants

Participants included 100 justice-involved adolescents and young adults (19 females and 81 males) ranging in age from 12 to 23 years (M = 17.53, SD = 1.59). Two participant groups were recruited, including 50 youth diagnosed with FASD, and a comparison group of 50 justice-involved who were not suspected of having sustained PAE. Participants were drawn from two Canadian provinces (British Columbia and Manitoba) to increase generalizability of the findings and facilitate recruitment of participants with an FASD diagnosis. Participants from the FASD group were eligible to take part in the study if they had received a diagnosis of FASD by a multidisciplinary diagnostic team following the Canadian Diagnostic Guidelines (Chudley et al., 2005), and had current or recent (within 3 years) involvement in the criminal justice system as youth or adults. Youth in the comparison group were eligible to participate if they were not suspected of PAE (as determined by the lead study investigator, following file review and interview) and were also currently or recently involved in the justice system. A final study entry criterion required all prospective participants to have a file accessible at a provincial community corrections office in order to review participants' formal legal history.

Sample characteristics are presented in Table 3.1. Diagnostically speaking, participants in the FASD group had predominantly received a diagnosis of *alcohol related neurodevelopmental disorder* (ARND). Participants from the two groups did not differ significantly with respect to age or gender. Aboriginal youth were overrepresented in the FASD group (86.0%, n = 43) relative to the comparison group (54.0%, n = 27) χ^2 (1, N = 98) = 12.96, p = .002, and overall in the current study. Overrepresentation rates in the comparison group were more consistent with National overrepresentation rates (e.g., Porter & Calverley, 2011; Rudin, 2005). Participants in both groups were evenly drawn from the recruitment sites, though a greater number of participants were recruited in Manitoba (n = 71) compared to British Columbia (n = 29). A greater proportion of participants in the comparison group were of Aboriginal background from Manitoba compared to BC, where none of the youth recruited into this group reported Aboriginal heritage. While Aboriginal representation rates are substantially higher in youth justice populations in Manitoba compared to BC (Statistics Canada, 2007), this difference is nonetheless significant. In terms of justice-system variables, significantly more youth in the comparison group from BC

were post-adjudication (85.7%, n = 12) relative to youth from Manitoba (38.9%, n = 14), $\chi^2(1, N = 99) = 8.85$, $p = .003$, $\varphi = -.10$. Lastly, youth from both groups were in custody at

Table 3.1. Sample Characteristics by Location and Group

	British Columbia			Manitoba		
	FASD (n = 15)	COMP (n = 14)	Analyses	FASD (n = 35)	COMP (n = 36)	Analyses
	n (%)	*M* (*SD*)		*n* (%)	*M* (*SD*)	
FASD Diagnosis						
ARND	13 (86.7)	-	-	31 (88.6)	-	$\chi^2 = 2.58$ $\varphi = .23$
FAS	1 (6.7)	-		0 (0.0)	-	
pFAS	1 (6.7)	-		4 (0.0)	-	
Age	17.13 (1.81)	16.86 (1.41)	$t = .46$ $d = .18$	17.80 (1.84)	17.69 (1.19)	$t = .29$ $d = .07$
Gender (%)						
Male	12 (80.0)	12 (85.7)	$\chi^2 = .17$ $\varphi = -.08$	28 (80.0)	29 (80.6)	$\chi^2 < .01$ $\varphi = -.01$
Ethnicity (%)						
Aboriginal	12 (80.0)	0 (0.0)	$\chi^2 = 19.22^{***}$ $\varphi = .81$	31 (88.6)	27 (75.0)	$\chi^2 = 5.26$ $\varphi = .27$
Caucasian	2 (13.0)	11 (75.6)		4 (11.4)	4 (11.1)	
Other	1 (6.7)	3 (21.4)		0 (0.0)	5 (13.9)	
Adjudication Status						
Pre-adjudication	7 (46.7)	2 (14.3)	$\chi^2 = .35$ $\varphi = .35$	20 (57.1)	22 (61.1)	$\chi^2 = .73$ $\varphi = -.04$
Post-adjudication	8 (53.0)	12 (80.0)		15 (42.9)	14 (38.9)	
Custody Status						
Community	12 (80.0)	10 (71.4)	$\chi^2 = .29$ $\varphi = .10$	12 (34.3)	11 (30.6)	$\chi^2 = .11$ $\varphi = .04$
Custody	3 (20.0)	4 (28.6)		23 (65.7)	25 (38.9)	
Supervision Status						
Bail Order	1 (6.7)	1 (7.0)	$\chi^2 = .02$ $\varphi = .02$	0 (0.0)	5 (13.9)	$\chi^2 = 5.96$ $\varphi = .29$
Probation Order	10 (66.7)	9 (64.3)		29 (82.9)	23 (63.9)	
None	4 (26.7)	4 (28.6)		6 (17.1)	8 (22.2)	
First Justice Contact						
Police contact	11.29 (2.67)	12.50 (2.56)	$t = -1.23$ $d = -.48$	12.13 (2.03)	12.46 (1.96)	$t = -.71$ $d = -.17$
Official charge	14.40 (1.72)	14.86 (1.70)	$t = -.72$ $d = -.28$	13.71 (1.73)	14.97 (1.73)	$t = -3.14^{**}$ $d = .76$

$^{**}p < .01$, $^{***}p < .001$.

Note. N = 100.

the time of study enrolment at higher rates in Manitoba (67.6%, n = 48) compared to those recruited in BC (24.1%, n = 7), χ^2 (1, N = 99) = 15.72, p < .001, φ = .40, but this is again consistent with regional differences in youth incarceration rates. For instance, between 2008 and 2009, youth remand admission rates in British Columbia were 36 per 100,000, versus 176 per 100,000 in Manitoba. Youth custody admission rates also differ similarly between the provinces (Calverley, Cotter & Halla, 2010).

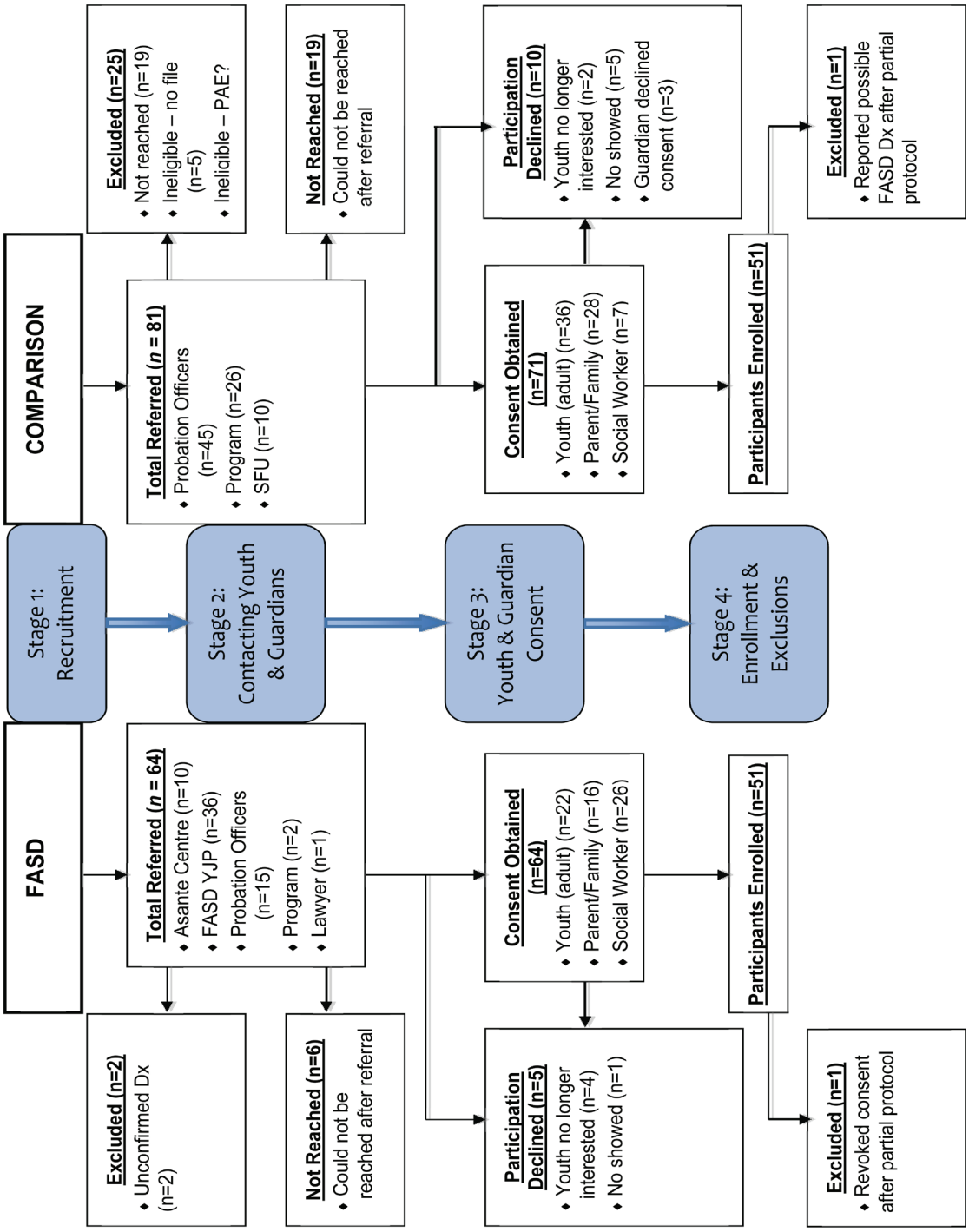
3.2.2. Procedure

Recruitment procedures for the two participant groups differed based on diagnostic status. Participants in the FASD group were recruited from a variety of settings across British Columbia (primarily in Vancouver and the Lower Mainland urban region) and Manitoba (primarily in Winnipeg and the surrounding urban region). Youth with a diagnosis were mainly recruited via clinical liaison workers at two FASD diagnostic clinics mandated to assess youth in the criminal justice system (The Asante Centre for FAS in British Columbia, and the Youth FASD Justice Program in Manitoba). Other professionals were also encouraged to refer participants to the study, including BC Ministry of Child and Family Development FASD Key Workers, probation officers, and lawyers in both provinces. Recruitment flyers were circulated at a large National-level FASD conference in Vancouver, BC. Participants in the comparison group were recruited from probation offices and justice-stream school and vocational programs in the same jurisdictions from which FASD participants were drawn.

Specific data about recruitment, enrollment procedures, and participation rates are described in Figure 3.1. Overall, 145 referrals to the study were received. Active parental consent was obtained for all participants under the age of majority in each study jurisdiction, with only three guardians declining consent for their child/ward to participate in the research. From the total pool of youth referred to the study, 102 were enrolled, resulting in a participation rate of 70.3% for the overall study. The remaining referred youth were not enrolled for a variety of additional reasons, including not being able to reach participants' referred to the study, not having an accessible probation file to review, or having an unconfirmed FASD diagnosis or suspicion of PAE. This figure is generally in keeping with examples of other longitudinal studies of adolescent risk, ranging between 70% and 80% (e.g., Green, Gesten, Greenwald, & Salcedo, 2008; Schubert et al., 2004). Two enrolled participants were later eliminated from the study due to a failure to complete most of the

protocol. The first declined to continue his involvement in the study following a single 20-minute study session (FASD sample) and the second completed half the study protocol, but then reported a possible FASD diagnosis that could not be confirmed by way of formal assessment, and was thus excluded from both study groups.

Figure 3.1. Study Recruitment Procedures



3.2.3. Representativeness

Youth recruited into the FASD group generally represented a good fit with respect to the pool of youth assessed via the project's two principal main referral streams. Overall, youth referred to these clinics tend to be male (approximately 75.0%), and a substantial proportion was of Aboriginal heritage. Youth in the comparison group were actively recruited to ensure a relative "fit" with participants in the FASD group. In general, prospective referral sources such as probation officers were requested to refer any and all prospective participants who met study eligibility criteria. However, efforts were also made to target comparison youth with respect to their detention status at rates comparable to the FASD group and overall incarceration rates in the study jurisdictions. Specifically, referral sources were asked to recommend participants at similar rates with respect to custody status in an effort to match the baseline offending severity patterns between the groups. Overall, the goal of this approach was to recruit a group of youth into the comparison sample who closely approximated youth in the FASD sample, thereby increasing the chances that PAE reflected the key difference between groups. This strategy was not without limitations, and likely resulted in the recruitment of a comparison group that may not generalize to the broader population of youth in the criminal justice system. Rather, they may best represent a group of relatively serious offenders who share a pattern of high risks and needs, but were not known to be exposed to alcohol in utero.

All study procedures were consistent with current ethical protocols. Approval was obtained from the appropriate ethical review boards at Simon Fraser University, and the British Columbia Youth Justice/Youth Forensic Psychiatric Services Research Ethics Board. Written approval was provided by BC Corrections, covering adult community corrections offices and custody centres. Formal approval to access youth justice records was obtained via a successful application to the Youth Court under the *YCJA* in Manitoba. Written approval was also obtained from Manitoba Justice (covering adult and youth probation offices). Additional clinical agencies in both BC and Manitoba provided written approval for participant recruitment from their sites.

During the referral process, initial contact with prospective participants was facilitated via liaison staff who requested permission from youth and/or their legal guardians to forward their information to the research team. A member of the research team then extended an invitation to participate. Active parental consent was obtained for youth participants following

appropriate statutes governing age of majority in each province for both the FASD and comparison groups, while older participants provided their own consent. Key elements of informed consent were reviewed with participants and legal guardians prior to enrolling them in the study. Owing to the possible cognitive limitations of participants in both groups, all aspects of the informed consent process were carefully explained to participants, and youth were required to correctly paraphrase the main elements before undertaking the study. During the consent procedure youth and guardians were also asked for permission to access their youth justice records and clinical records in order to confirm FASD diagnosis and code justice-system involvement. Clinical records requested were limited to assessment results/reports from FASD diagnostic evaluations and did not include broad ranging health records. Participants were offered a $25 gift card for their participation in the study.

Procedures for both the FASD and comparison groups were parallel. After obtaining informed consent, participants completed a semi-structured interview lasting between two and 3 hours, on average (2.25 hours for comparison participants, and 3 hours for FASD participants). This interview included questions gauging demographic information, legal experiences, justice system involvement, educational history, and mental health history. Participants also completed several clinical forensic assessment measures at this time, as well as intellectual and academic testing. Interviews were conducted in a variety of settings, most typically at the clinic or probation office from which a participant was recruited. Study measures were selected to accommodate the multiple challenges youth with FASD experience in didactic testing (e.g., attention problems, reading difficulties, poor frustration tolerance), breaks were offered frequently, and the protocol was sometimes administered over several sessions.

All measures in the study protocol were administered and scored by one of three examiners: the lead experimenter with Doctoral level training in psychology, and two research assistants with Bachelor's degrees in psychology. The lead experimenter received training and supervision on the instruments from a senior clinical forensic psychologist who is an expert in this area, while research assistants were trained by the lead experimenter. Each examiner completed a total of five study protocols during the training phase of the study: three cases were completed and compared with "gold standard" scores derived by the lead experimenter and the clinical expert. Two complete protocols were administered under observation by the lead examiner to ensure accurate administration of the materials prior to beginning independent administration. Regular meetings were held to review scoring

drift after scoring interrater reliability cases to promote reliable administration of the study protocol.

3.2.4. Measures

Structured Assessment of Violence Risk in Youth (SAVRY, Borum et al., 2003)

The SAVRY is a structured professional judgment (SPJ) instrument designed to assist evaluators in assessing violence risk in male and female adolescents aged 12 to 18. It assesses 24-risk factors for violence in grouped in three domains, including social contextual risk factors, individual risk factors, and historical risk factors. In addition, this measure assesses 6 protective factors (e.g., prosocial relationships with supportive adults). All risk items are rated on a 3-point scale (low, moderate, high) and the protective factors are rated as present or absent. Raters are directed to make an overall rating of the risk for future violence, taking into consideration item-level risk ratings, as well as additional factors relevant to the individual youth under evaluation. Research indicates that the SAVRY has adequate reliability and significantly predicts subsequent violent and general recidivism in offending samples of youth (Borum et al., 2005; Catchpole & Gretton, 2003; Dolan & Rennie, 2008, Meyers & Schmidt, 2008; Spice, Viljoen, Gretton, & Roesch, 2010).

Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge et al., 2002)

The YLS/CMI is an inventory developed to evaluate juvenile offenders' general recidivism risk and to assist in case management planning. The YLS/CMI is based on the risk, need, and responsivity principles of case classification (Hoge, Andrews, & Leschied, 2002). Evaluators assess whether 42 risk/need factors associated with juvenile offending are present or absent for a particular youth. Risk/need factors are divided into 8 subscales: Prior and Current Offences, Family Circumstances/Parenting, Education/Employment, Peer Associations, Substance Abuse, Leisure/Recreation, Personality/Behavior, and Attitudes/Organization. The instrument is completed based on interviews with the youth, review of clinical records, and information gathered from collateral sources. Based on total scores, youth are classified into four levels of risk for continued criminal activity: low, moderate, high, or very high. Raters are also provided an opportunity to override the actuarial risk rating and make a structured professional judgment regarding a young person's risk level based on their assessment of salient risk factors for a given young

person. Studies have indicated that the YLS/CMI has adequate interrater agreement and internal consistency across a variety of settings (Catchpole & Gretton, 2003; Hoge, 2005; Marczyk, Heilbrun, Lander, & DeMatteo, 2003; Schmidt, Hoge, & Gomes, 2005). In addition, a recent meta-analysis has demonstrated that the YLS/CMI consistently predicts both violent and non-violent recidivism in adolescent offenders (Olver, Stockdale, & Wormith, 2009).

The Psychopathy Checklist—Youth Version (PCL-YV, Forth et al., 2003)

The PCL-YV is a 20-item clinical rating tool that assesses psychopathic features in adolescents 12 to 18 years of age. Four domains are rated based on file and interview information (Interpersonal, Affective, Behavioral, and Antisocial). Items are rated on a 3-point scale and scores range from 0 to 40, with higher scores indicating a larger number of psychopathy-related traits. It has acceptable inter-rater reliability in youth and has been shown to predict violence and reoffending in a number of studies (e.g., Edens, Campbell, & Weir, 2007; Gretton, Hare, & Catchpole, 2004, Kosson, Cyterski, Steuerwald, Neumann & Walker-Mathews, 2002; Olver et al., 2009). A number of studies have reported varying factor structures for use with the PCL-YV (Forth, 2005). In the present study, the 4-factor PCL-YV model identified by Hare (2003) was calculated for each participant, including Interpersonal items (1, 2, 4, and 5), Affective items (6, 7, 8, and 16), Behavioral Lifestyle items (3, 9, 13, 14, and 15), and Antisocial items (10, 12, 18, 19, and 20). Neumann, Kosson, Forth, and Hare (2006) have demonstrated good fit for this model in two samples of youth, however this finding was not replicated by Sevecke, Pukrop, Kosson, and Krishcer (2009) in a sample of German adolescents. Nevertheless, the four factor structure appeared a clinically useful method of examining sub-scores on the PCL-YV in youth with an FASD diagnosis, owing to the fact that items left out of other models (such as poor anger control and early behaviour problems) were thought to figure importantly in this population's risk profile.

3.2.5. Outcome Measures

Offense Histories

Participants' past experiences in the justice system were measured by both official and self-report methods. During interview, youth were asked to report on their earliest justice system contacts (first police contact and first arrest). They also completed a self-report measure of their involvement in criminal behaviour (see below). Official justice records were

coded from provincial files held at youth community corrections (probation) offices, and from databases in each province, including CORNET in British Columbia and COMS in Manitoba. Variables coded for inclusion in analyses included age at first charge, charge, conviction, and disposition histories, and time spent in pre- and post-adjudicative custody. Offence histories (coded from official data) were categorized into non-sexual violence, sexual violence, property, drug-related, breach of bail/undertaking conditions, and breach of probation/supervision conditions. Participants' official offence histories were also coded with respect to overall severity using Justice Canada's Crime Severity Index, which takes into consideration both the volume and seriousness of crime by assigning a weight to different charges based on sentences handed down by criminal courts (see Appendix; Babyak, Alavi, Collins, Halladay, & Tapper, 2009; Wallace, Turner, Babyak, & Matarazzo, 2009). Offence weights vary considerably in range. For example, a single charge of murder in the first degree is assigned a weight of 7042, theft over $5,000 a value of 139, and violating probation conditions is assigned a weight of 24. Data from the present study are compared between groups and youth and adult rates published by Brennan and Dauverne (2011, see Table 3.2).

Table 3.2. Historical Offending Patterns

Charge Type	FASD				Comparison				Analyses			
	n	%	M	(SD)	*n*	%	*M*	(*SD*)	χ^2	*φ*	*t*	*d*
Non-sexual violence	42	84.0	5.94	(5.80)	36	72.0	5.24	(6.50)	2.10	-.14	.57	.11
Sexual violence	5	20.0	.76	(3.17)	5	20.0	0.16	(0.55)	.00	.00	1.32	.27
Property	46	92.0	9.14	(11.67)	39	78.0	6.92	(9.03)	3.84	-.20	1.06	.21
Drug-related	7	14.0	.44	(1.61)	15	30.0	0.68	(1.39)	3.73	.19	-.80	.16
Breach bail	46	92.0	9.10	(8.20)	36	72.0	6.42	(7.78)	6.78**	-.26	1.68	.34
Breach probation	46	92.0	13.28	(12.97)	36	72.0	7.88	(11.68)	6.78**	-.26	2.19*	.44
Total charges	-	-	39.78	(30.69)	-	-	28.42	(27.24)	-	-	1.96	.40
Total convictions	-	-	16.84	(13.03)	-	-	10.42	(9.73)	-	-	2.79**	.56
Total charges (sample)			1989				1420			-		

*$p < .05$, **$p < .01$.
Note. $N = 100$.

Self-Report of Offending Questionnaire (SRO; Huizinga, Esbensen, & Weiher, 1991; Knight, Little, Losya & Mulvey, 2004)

The SRO was completed by participants to evaluate offense histories not captured by official records. The SRO questionnaire used in this study is a self-report measure that is

widely used in research on delinquency and offending (Knight et al., 2004). It examines involvement in criminal activities, including both aggressive, property, and public order offences and has been shown to have good psychometric properties (Knight et al., 2004). Modifications to the instrument for the present study included adding questions regarding reoffence frequency and the number of times youth have violated probation conditions, deleting the question on whether the respondent has ever killed someone, and adding a question about sex trade related activities, resulting in a 25-item scale. Participants completed two versions of the SRO, including a lifetime report (LSRO) and a report of their offending behaviour during the 6-month period prior to their enrolment in the study (SRO).

Prospective Offending

Participants' official prospective recidivism records were retrieved from provincial databases and coded by an independent rater, blind to participants' baseline offence histories, risk ratings, or group membership. They were also coded for offence severity.

3.2.6. Data Analysis

Descriptive and Univariate Analyses

An important aim of this study was to provide an overview of descriptive information about youth with FASD in the justice system potentially useful for informing current professional practice in the case management of youth with FASD. Therefore, a wide array of descriptive data is presented at the item and subscale level of analysis, and multiple analyses are also conducted at the univariate level on all risk tools, including *t* tests and chi-square analyses.

Time to First Reoffence

Kaplan-Meyer survival analyses were conducted to examine differences in the rate and time at which participants' recidivated during the follow-up period. For these analyses, recidivism was defined as any new charge sustained in the 3-month period following study enrolment. Participants who were in custody and therefore unable to sustain a new substantive charge in the community were excluded from these analyses (n = 21, 21.0%). Those participants who did not sustain a new charge during the follow-up period were assigned a survival time that ranged from his or her baseline interview until the 3-month date at which reoffence data was collected.

Differential Predictive Validity of Risk Tools as a Function of Group

Moderated hierarchical logistic regression was first used to test whether there were significant group differences in the predictive validity of the measures. In the first step of each logistic regression equation, each predictor (risk tool subscale scores, total scores, and structured professional judgment decisions) was entered alone to first examine the scale's association with outcome (general recidivism). Participants' group membership (FASD vs. comparison) was entered in the second step. Product terms representing the interaction between each predictor and group membership were calculated and entered in the third step (Baron & Kenny, 1996; Hayes & Matthes, 2009; Holmbeck, 1997). If the interaction term was significant, it indicated that there were group differences in the predictive validity of the risk tools, such that the risk tools operate differently between the groups. Significant interaction terms were next evaluated by conducting simple slope analyses to determine significance of any conditional effects between the FASD and comparison groups (levels 1 and 2 of the "group" moderator). Analyses were conducted using a macro developed by Hayes and Matthes (2009) to facilitate post-hoc interpretation of significant moderation effects.

Receiver operating characteristic (ROC) analyses were conducted to further examine the accuracy of various risk tools in predicting prospective recidivism in each group. ROC analyses generate Area under the Curve scores (AUC) that reflect the probability that an individual who reoffends will receive a higher score on the tool than that of an individual who does not reoffend. AUC values are thought to provide a measure of association relatively free from influence by base rates of offending (Conroy & Murrie, 2007; Mossman, 1994; Rice & Harris, 1995). Therefore, this set of analyses was conducted to augment moderated hierarchical logistic regression findings, which were likely more heavily impacted by differential reoffence base rates between the groups. AUC values range from 0, a perfect negative correlation, to .5, a completely chance outcome, to 1.0, a perfect prediction, with higher AUC values reflecting better classification accuracy. By convention, AUC values between .70 and .90 indicate good predictive accuracy, and values greater than .90 indicate excellent accuracy (Swets, 1988).

Interrater Reliability

To examine interrater reliability of the SAVRY, YLS/CMI, and PCL-YV, a second rater attended 14 (14.0%) of the baseline interviews and reviewed official offence records

and community corrections files before independently scoring each of the risk tools. Intraclass correlation coefficients for single raters (ICC) were calculated using a two-way mixed effects model (McGraw &Wong, 1996). The ICC for subscale, total scores, and structured professional judgment ratings on each of the instruments fell in the excellent range (Cicchetti & Sparrow, 1981), with SAVRY ICC values ranging from .87 to .98, YLS/CMI values ranging from .79 to .99 and the PCL-YV total score falling at .90.

General Procedure

Where multiple comparisons were made, a modified Bonferroni correction was applied that set an overall *p* value of .10 and divided that value by the number of tests conducted within a single set of analyses. A more liberal significance value was chosen because the application of a traditional Bonferroni correction to a .05 significance level in cases where comparisons are drawn between measures that are highly intercorrelated often results in estimates that are too conservative (Sankoh, Huque, & Dubey, 1997). Effect sizes for *t*-tests (Cohen's *d*) and Chi-square (*phi*) analyses are reported throughout, and these reflect the size of statistically significant differences and range. By convention, effects sizes for Cohen's *d* range from .2 (small) to .5 (medium) to .8 and above (large), and from .1 (small) to .3 (medium) to .5 and above (large) for *phi* (Cohen, 1988). Effects sizes from logistic regression analyses are reported as odds ratios (Allen & Le, 2008), or, the ratio of the odds of being classified in one category of the outcome variable for different values of the predictor(s). All analyses were conducted using IBM Statistics 19 for Macintosh OS.

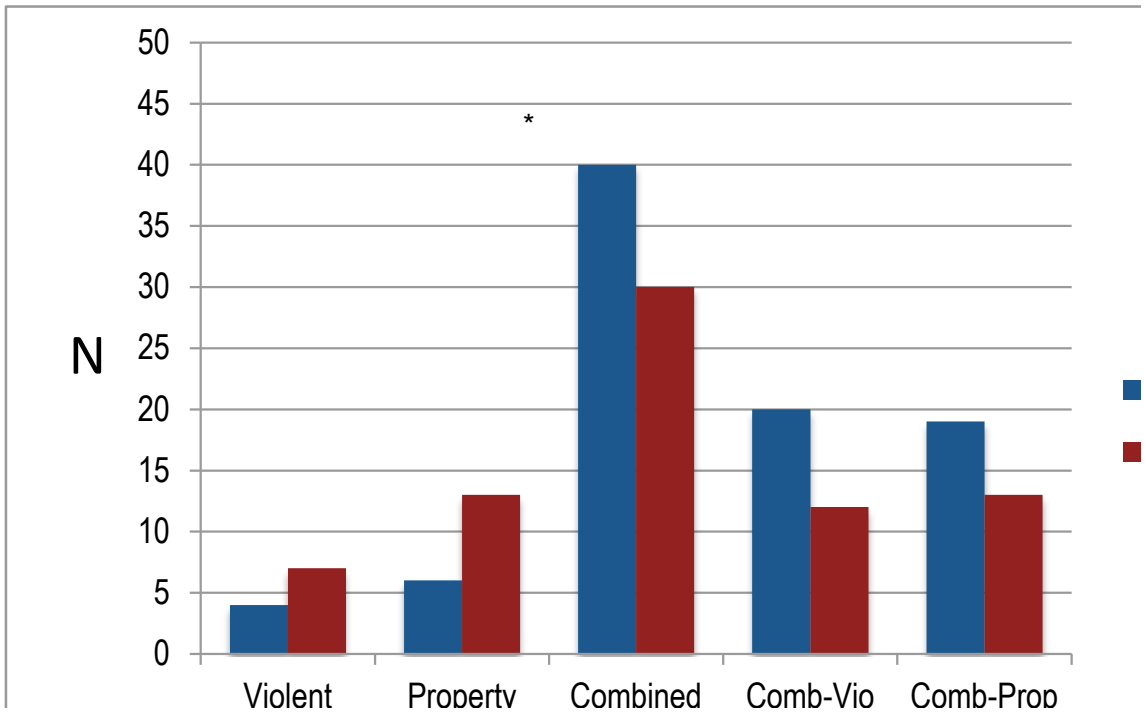
3.3. Results

3.3.1. Criminal Justice Histories

First, historical offending patterns among youth with and without an FASD diagnosis were examined, as it was anticipated that differences between the groups may emerge with respect to both the onset and frequency of offending behaviour (see Table 3.2). Counter to expectations, youth in both groups reported comparably early contact with police and formal justice system involvement. However, in keeping with hypotheses, youth with an FASD diagnosis did receive their first formal charge an average of 1 year earlier (M = 13.92, SD = 1.68) than the comparison group (M = 14.96, SD = 1.72), t (98) = -3.01, p = .003, d = -.61. In examining overall offending patterns, few differences emerged between the groups when

comparing types of offending (e.g., violent, property, etc.). However, as hypothesized, a significantly higher proportion of youth in the FASD group were charged with breaching either the conditions of a bail order or undertaking (n = 46, 92.0%) than comparison participants (n = 36, 72.0%), χ^2 (1, N = 99) = 6.77, p = .009, φ = - 0.26. As shown in Figure 3.2, differences in primary offence type (violent vs. non-violent) between the groups were not significant, though significantly more youth in the FASD group (n = 40, 80.0%) were classified as a "mixed" type offender (engaging in both violent and non-violent offending) than comparison youth (n = 29, 58.0%), χ^2 (1, N = 99) = 5.66, p = .017, φ = - 0.24.

Figure 3.2. Participants' Primary Offense Type Classifications



* p < .05.

Note: N = 100. Participant's primary offence type was classified as *violent* or *property* if they had engaged in only violent or property based offending in the past. *Combined* type offenders had engaged in both violent and property based offending. *Combined-Violent* offenders had engaged in combined type offending, with a predominance of violent offending, while *combined-property* offenders had engaged in combined type offending, but predominantly property based crimes.

Next, differences in the severity of participants' historical offending patterns were examined. Overall, mean crime severity index (CSI) scores were much higher in the comparison group than the FASD group. However, this difference was almost entirely accounted for by variations in the comparison group drawn from Manitoba (Table 3.3). Specifically, comparison participants from Manitoba earned significantly higher mean CSI

scores (*M* = 251.72, *SD* = 670.56) than youth in the FASD group (*M* = 69.81, *SD* = 55.64), *t* (69) = -2.71, *p* = .009, *d* = -.55.[3] Upon closer examination, several youth in the Manitoba comparison group had sustained very serious charges resulting in high CSI scores, but few overall charges, thereby producing very high average CSI scores. The same pattern was not evident in youth with FASD, as those with high raw CSI scores also tended to have substantially more charges (including those with low CSI weights, such as breaching probation conditions) resulting in lower average CSI scores. By excluding a single participant from this group with an outlying high CSI score, the average dropped to 125.40 (*SD* = 139.97), producing rates more consistent with provincial averages.

Table 3.3. Crime Severity Index Scores

	2010 Adults	2010 Youth	Current Sample			
			FASD		Comparison	
	M	*M*	*M*	(*SD*)	*M*	(*SD*)
National Average	82.7	90.5	-		-	
Manitoba	127.8	171.3	69.81	(55.64)	125.40	(139.97)a
British Columbia	102.4	70.6	77.63	(69.44)	74.44	(54.87)

[a] Mean scores for comparison youth from Manitoba exclude a single participant with an outlying CSI score. Including this individual raises average CSI scores to 251.72 (*SD* = 670.57)

Note. *N* = 100. Canadian adult and youth crime severity index (CSI) data from year 2010 is excerpted from Statistics Canada 2011 Police-Reported Crime Statistics in Canada Report (Brennan & Dauverne, 2011).

Self-reported Offending

Participants' reports regarding lifetime offending patterns are presented in Table 3.4. On the whole, youth in the comparison group reported engaging in significantly more crime (*M* = 38.33, *SD* = 19.10) than the FASD group (*M* = 29.75, *SD* = 16.62), as reflected in LSRO total scores, *t* (96) = -2.34, *p* = .02, *d* = -.48. The same pattern was true for both aggressive and non-aggressive/income based offence types. This trend differs from official data, which indicated significantly higher overall offending in the FASD group, but few differences with respect to offence history in terms of violent and other types of crime patterns. Interestingly, participants' LSRO scores and official offending history (number of charges) were significantly associated in the comparison group (*r* = .30, *p* = .03), but not in

[3] The distribution of CSI scores violated assumptions of normality, consistent with problems often found in count data, and approximated a Poisson distribution. Analyses were conducted on CSI scores using a Log 10 transformation (Tabachnik & Fidell, 1996).

the FASD group (r = .15, p = .31), suggesting better accuracy between self-report and official data in participants without PAE. Notably, youth with an FASD diagnosis reported a history of engaging in sexual activity for money (M = .42, SD = 1.00) more frequently than comparison participants (M = .04, SD = .28). In terms of more recent offending patterns (within the 6-month period before participants' study enrolment), no significant differences in offending patterns were found between the groups.

Table 3.4. Participant's Lifetime Self-Report of Offending Scores

	FASD[a] *M* (*SD*)	Comparison *M* (*SD*)	Analyses *t* (*d*)
Aggressive Offences	1.13 (.11)	1.53 (.92)	-2.34* (-.48)
Arson	.67 (.83)	.88 (1.32)	
Sexual assault	.15 (.65)	.00 (.00)	
Shot & hit someone	.31 (.72)	.56 (1.26)	
Shot at someone	.46 (.85)	.85 (1.20)	
Robbery with weapon	1.35 (1.54)	1.96 (1.62)	
Robbery no weapon	1.60 (1.53)	2.18 (1.62)	
Assault causing bodily harm	1.29 (1.40)	1.92 (1.52)	
Fight	3.00 (1.29)	3.50 (1.23)	
Gang related fighting	1.42 (1.62)	1.92 (1.75)	
Carried gun	1.02 (1.36)	1.66 (1.66)	
Income/Property Offences	1.52 (.85)	1.98 (.90)	-2.59* (-.53)
Property destruction	2.25 (1.42)	2.96 (1.35)	
Break and enter	1.54 (1.40)	1.98 (1.60)	
Theft/shoplifting	2.52 (1.44)	2.92 (1.47)	
Stolen goods	2.33 (1.64)	2.84 (1.53)	
Fraud	.33 (.83)	30 (.89)	
Auto Theft	.83 (1.33)	1.16 (1.66)	
Break and enter: Vehicle	1.85 (1.58)	2.52 (1.74)	
Sold marijuana	1.60 (1.62)	2.74 (1.58)	
Sold illegal drugs	1.73 (1.71)	2.20 (1.90)	
Carjacking	.23 (.69)	.18 (.66)	
Other Offences	-	-	-
Joyriding	1.96 (1.60)	1.98 (1.74)	
Driving intoxicated	.88 (.13)	1.86 (1.68)	
Prostitution	.42 (1.00)	.04 (.28)	
Violated probation condition	3.08 (1.29)	3.30 (1.37)	
Total Score	29.75 (16.62)	38.33 (19.10)	-2.36* (-.48)

*p < .03. [a] The LSRO was not completed by two participants in the FASD group due to administrative error. Total scores do not include the item "violated probation conditions."

Note. N = 100; LSRO ratings: 1 = never, 2 = once, 3 = 2-3 times, 4 = 4 times; 5 = five or more times.

Prospective Offending (3-month follow-up period)

Youth who were held in custody during the entire follow-up period (*n* = 21, 21.0%) were excluded from further analyses because they did not have formal opportunity to incur new substantive charges in the community. Consistent with the substantially higher average baseline CSI scores found among comparison participants, more youth from the comparison group spent the entire follow-up period in custody. Youth who spent the entire follow-up period in custody were also significantly more likely to receive a rating of "high" on the SAVRY (16 out of 21 excluded participants, 84.2%) and "high" or "very high" on the YLS/CMI (15 out of 21 excluded participants, 78.9%), suggesting that youth with the highest levels of risk were assigned the most restrictive management approaches during the follow-up period.

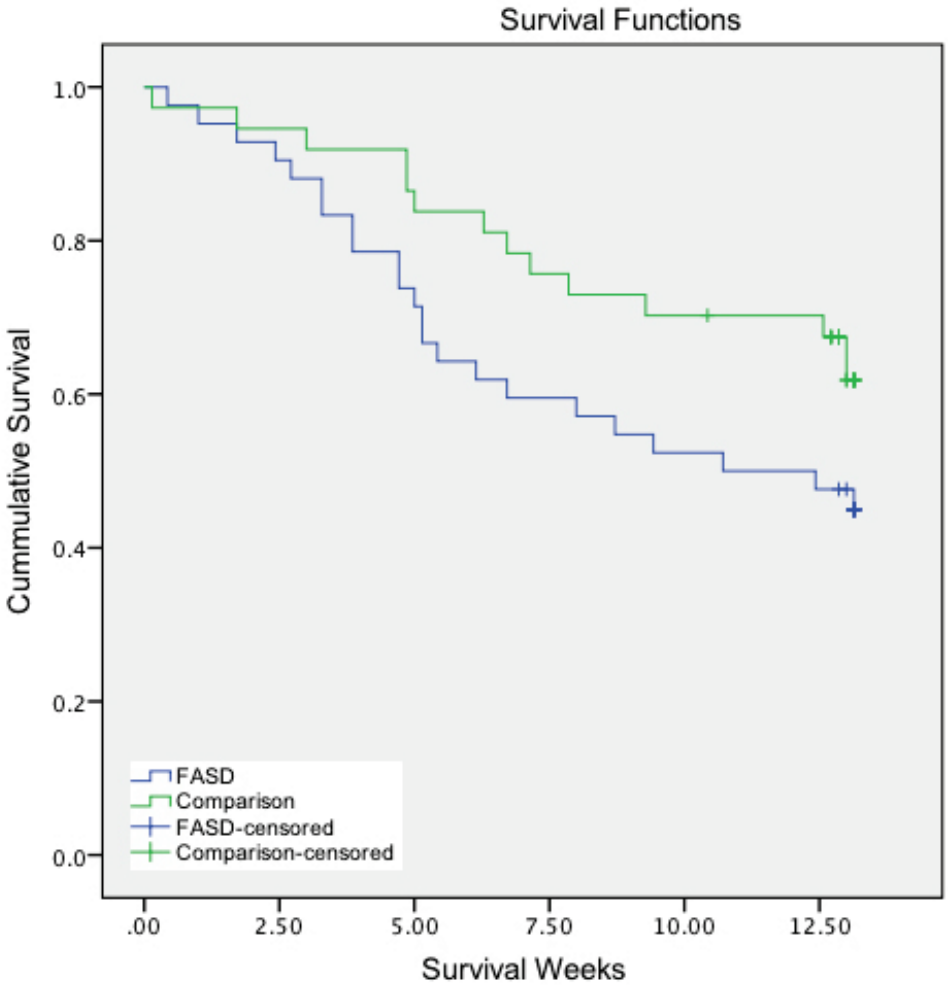
In line with expectations, participants in the two groups recidivated at differential rates during this period (Table 3.5), with much higher reoffence base rates (any new charge) in the FASD group (*n* = 23, 54.8%) than the comparison group (*n* = 13, 35.0%), however, this difference was not statistically significant. The same pattern of differences also emerged between the groups in terms of specific offence types (e.g., violent. non-violent), with the FASD group incurring more of each type of charge. Effect sizes for these differences (reported in Table 3.5) ranged from small to medium, suggesting small group size could have played a role in the failure to detect statistically significant differences in the general and violent recidivism categories. The two groups also accumulated similar numbers of new charges during the follow-up period. Survival analyses conducted to examine participants' time to reoffence (or, survival time in the community before incurring a new charge) demonstrated a trend towards more rapid recidivism in the FASD group (62.95 days) relative to the comparison group (75.23 days), but this difference was not significant (see Figure 3.3).

Table 3.5. Three-month Follow-up Period Recidivism Base Rates

	FASD (*n* = 42)		Comparison (*n* = 37)		Analyses	
	***n* (%)**	***M* (*SD*)**	***n* (%)**	***M* (*SD*)**	***t* (*d*)**	**χ^2 (φ)**
Any Recidivism[a]	23 (54.8)		13 (35.0)			3.05 (-.20)
Violent	11 (26.2)		5 (13.5)			1.96 (-.16)
Non-Violent	10 (23.8)		6 (16.2)			.70 (-.09)
Breach	18 (42.9)		13 (35.1)			.49 (-.08)
Only Breaches	6 (14.3)		6 (16.20			.06 (.03)
Total Charges[b]		4.87 (4.10)		6.08 (7.15)	-.65 (-.23)	
Average Crime Severity		52.62 (54.50)		39.51 (25.09)	.82 (.28)	

[a]*N* = 79, 21 participants were excluded from analyses because they were incarcerated during the entire follow-up period. [b] *N* = 36, reflecting only those participants who incurred new charges during the follow-up period.

Figure 3.3. Participant Survival Rates during the 3-month Follow-up Period



3.3.2. Risk/Need and Protective Factor Profiles

First, the risk/need and protective factors identified across the SAVRY, YLS/CMI, and PCL-YV were compared between groups to examine possible differences in profiles for youth with FASD (see Tables 3.6, 3.7, and 3.8, respectively).

Table 3.6. SAVRY Scores and Risk Estimates by Group

	FASD *M* (SD)	Comparison *M* (*SD*)	Analyses *t* (*d*)
Historical Factors	15.24 (3.05)	11.62 (3.59)	5.43*** (1.10)
History of violence	1.80 (.45)	1.88 (.33)	
History of non-violent offending	1.92 (.34)	1.76 (.46)	
Early initiation of violence	1.48 (.71)	1.52 (.74)	
Past supervision/intervention failures	1.94 (.71)	1.74 (.63)	
History of self-harm or suicide attempts	1.36 (.83)	.60 (.81)	
Exposure to violence in the home	1.04 (.83)	.74 (.80)	
Childhood history of maltreatment	1.28 (.76)	.72 (.81)	
Parental/caregiver criminality	1.12 (.77)	1.04 (.73)	
Early caregiver disruption	1.40 (.42)	.42 (.73)	
Poor school achievement	1.82 (.39)	1.48 (.73)	
Social/Contextual Factors	7.26 (2.19)	6.74 (2.42)	1.12 (.23)
Peer delinquency	1.68 (.59)	1.80 (.45)	
Peer rejection	.76 (.72)	.80 (.80)	
Stress and poor coping	1.50 (.58)	1.28 (.64)	
Poor parental management	1.24 (.74)	1.02 (.80)	
Lack of personal/social support	1.08 (.83)	.62 (.81)	
Community disorganization	1.04 (1.22)	1.22 (.91)	
Individual Factors	11.40 (2.70)	8.76 (4.39)	3.62*** (1.06)
Negative attitudes	1.10 (.68)	.82 (.77)	
Risk taking/impulsivity	1.66 (.56)	1.46 (.61)	
Substance use difficulties	1.74 (.53)	1.60 (.64)	
Anger management problems	1.76 (.52)	1.14 (.81)	
Low empathy/remorse	1.22 (.76)	1.06 (.74)	
AD/HD difficulties	1.56 (.73)	1.00 (.95)	
Poor compliance	1.10 (.71)	.70 (.68)	
Low interest/commitment to school	1.34 (.80)	.80 (.81)	
Total Score	33.40 (6.69)	26.62 (7.28)	4.85*** (.98)
Protective Factors	.96 (1.17)	1.88 (1.48)	-3.44** (-.70)
	# %	**# %**	
Prosocial involvement	8 (16.0%)	8 (16.0%)	
Strong social support	9 (18.0%)	24 (48.0%)	
Strong attachment and bonds	16 (32.0%)	23 (36.0%)	
Positive attitude towards intervention	10 (20.0%)	17 (34.0%)	
Strong commitment to school	1 (2.0%)	11 (22.0%)	
Resilient personality traits	4 (8.0%)	12 (24.0%)	

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

Note. $N = 100$.

Table 3.7. YLS/CMI Scores and Risk Estimates by Group

	FASD *M* (SD)	Comparison *M* (*SD*)	Analyses *t* (*d*)
Prior and current offences/dispositions	4.20 (.93)	3.44 (1.68)	2.80 (.57)
Family circumstances	3.22 (1.49)	2.78 (1.54)	1.45 (.29)
Education/employment	2.96 (2.36)	2.32 (1.96)	1.47 (.30)
Peer relations	3.52 (.91)	3.16 (1.09)	1.79 (.36)
Substance abuse	3.74 (1.44)	3.36 (1.45)	1.31 (.26)
Leisure and recreation	1.98 (.89)	1.77 (1.05)	1.05 (.21)
Personality and behavior	4.62 (1.35)	2.84 (1.83)	5.52*** (1.16)
Attitude and orientation	2.70 (1.39)	1.60 (1.41)	3.92*** (.79)
Total Score	26.88 (6.20)	21.22 (7.39)	4.15*** (.84)

****p* < .001. *Note.* *N* = 100.

Table 3.8. PCL-YV Scores and Factor Scores by Group

Items	FASD *M* (SD)	Comparison *M* (*SD*)	Analyses *t* (*d*)
1. Impression management	.38 (.58)	.28 (.54)	-
2. Grandiose sense of self-worth	.12 (.39)	.20 (.54)	-
3. Stimulation seeking	1.64 (.53)	1.32 (.65)	-
4. Pathological lying	.50 (.68)	.28 (.54)	-
5. Manipulation for personal gain	.20 (.45)	.26 (.56)	-
6. Lack of remorse	1.14 (.78)	.92 (.72)	-
7. Shallow affect	.30 (.58)	.34 (.52)	-
8. Callous/lack of empathy	.88 (.80)	.70 (.76)	-
9. Parasitic orientation	.50 (.68)	.32 (.59)	-
10. Poor anger tolerance	1.76 (.52)	1.12 (.80)	-
11. Impersonal sexual behavior	.90 (.86)	.34 (.63)	-
12. Early behavior problems	1.48 (.68)	1.22 (.79)	-
13. Lacks goals	1.22 (.71)	.86 (.81)	-
14. Impulsivity	1.56 (.68)	.94 (.74)	-
15. Irresponsibility	1.36 (.60)	1.00 (.76)	-
16. Failure to accept responsibility	1.00 (.76)	.72 (.78)	-
17. Unstable interpersonal relationships	.52 (.74)	.44 (.73)	-
18. Serious criminal behavior	1.74 (.44)	1.56 (.61)	-
19. Serious violation of conditional release	.74 (.85)	.26 (.53)	-
20. Criminal versatility	1.46 (.68)	1.06 (.74)	-
Total Score	19.30 (5.65)	13.96 (.630)	4.46*** (.90)
Four-Factor Model [a]			
Interpersonal	1.20 (1.41)	1.02 (1.73)	.57 (.57)
Affective	3.32 (2.01)	2.68 (1.93)	1.62 (.33)
Lifestyle	6.28 (2.01)	4.44 (2.04)	4.54*** (.90)
Antisocial	7.18 (2.00)	5.22 (2.24)	4.61*** (.93)

****p* < .001. [a] Hare & Neuman, 2005. Items included on the four factors include items 1, 2, 4, and 5 on the Interpersonal scale, items 6, 7, 8, and 16 on the Affective scale, items 3, 9, 13, 14, and 15 on the Lifestyle scale, and items 10, 12, 18, 19, and 20 on the Antisocial scale.
Note. *N* = 100.

In keeping with hypotheses, youth in the FASD group received significantly higher ratings across the three tools than those in the comparison group. On the SAVRY, participants in the FASD group were assigned significantly higher scores on the Historical Scale (M = 15.24, SD = 3.05) versus youth in the comparison group (M = 11.62, SD = 3.59), t (98) = 5.43, p < .001, d = 1.10. Several important factors emerged distinguishing the groups, with youth in the FASD group receiving much higher scores on items gauging past self-harm or suicide, childhood history of maltreatment, early caregiver disruption, and poor school achievement. Participants were otherwise fairly comparable in regards to legal factors included in this scale. Somewhat unexpectedly, youth in both groups were rated similarly in terms of the presence of Social/Contextual risk factors (though youth with FASD tended to be rated as more lacking in personal/social support). The FASD group was assigned significantly higher ratings across Individual factors (M = 11.40, SD = 2.70) than comparison youth (M = 8.76, SD = 4.39), t (98) = 3.62, p < .001, d = .73. They demonstrated substantially greater difficulties with anger management problems, poor compliance, and low interest and/or commitment to school. As predicted, youth in the FASD group demonstrated significantly fewer protective factors (M = .96, SD = 1.18) than comparison participants (M = 1.88, SD = 1.48), t (98) = -3.44, p < .01, d = .69, who were rated as having stronger social support, commitment to school, and resilient personality traits.

Fewer differences in risk/need patterns emerged between the two groups on the YLS/CMI. Overall, youth in the FASD group showed significantly higher risk levels (M = 26.88, SD = 6.20) than comparison participants (M = 21.22, SD = 7.39), t (98) = 4.15, p < .001, d =.84. Youth with FASD earned higher risk/need scores on the Personality and Behaviour scale (M = 4.62, SD = 1.35) than comparison youth (M = 2.84, SD = 1.83), t (98) = 5.52, p < .001, d = 1.16. They were also more likely to receive higher scores on the Attitude and Orientation scale (M = 2.70, SD = 1.39) than comparison participants (M = 1.60, SD = 1.41), t (98) = 3.92, p < .001, d = .79. These differences were considered “large” in terms of reported effect sizes, indicating practical and potentially important points for management and intervention approaches between the groups.

Youth with FASD were assigned significantly higher overall scores on the PCL-YV (M = 19.30, SD = 5.65) than participants in the comparison group (M = 13.96, SD = 6.30), t (98) = 4.46, p < .001, d = .90. Differences observed on the PCL-YV factor subscales were consistent with those already reported on the SAVRY and YLS/CMI. While there were no significant differences between groups on the interpersonal and affective subscales (those

features considered salient personality hallmarks of the psychopathic personality), youth with FASD were more likely to be assigned higher scores on both the lifestyle (M =6.28, SD = 2.01) and antisocial subscales (M = 7.18, SD = 2.00) than youth in the comparison group (M = 4.44, SD = 2.04 and M = 5.22, SD = 2.24, respectively), t (98) = 4.54, p < .001, d = .90 for Lifestyle, and t (98) = 4.61, p < .001, d = .93 for Antisocial. All reported PCL-YV effect sizes are considered large by conventional standards (Cohen, 1988).

Risk Classifications

Risk classifications assigned on the SAVRY and YLS/CMI are presented in Table 3.9. As hypothesized, significant differences in the distribution of risk classifications were evident, such that youth in the FASD group were assigned higher risk/need ratings than participants in the comparison group. The majority of participants with FASD (n = 41, 82.0%) received a "high" risk rating on the SAVRY, versus just over half of participants in the comparison group (n = 29, 58.0%), χ^2 (2, N = 98) = 7.84, p = .02, φ = .27. While the majority of youth in the FASD group also fell into the "high" risk category on the YLS/CMI (as determined by continuous scores), only 6.0% (n = 3) were placed in the highest ("very high") category. These patterns were similar for youth in the comparison group, though again youth with an FASD diagnosis were significantly more likely fall in the "high" risk category (n = 37, 72.0%) than comparison participants (n = 26, 56.0%), χ^2 (3, N = 97) = 9.71, p = .02, φ = .31. Alternatively, raters' professional override judgments of risk on the YLS/CMI appeared to distribute youth first placed in the "high" risk category, between the "high" and "very high" categories, with nearly one-quarter (n = 13, 26.0%) being upgraded on their risk/needs level.

3.3.3. Differential Patterns of Risk Association and Predictive Validity of the Risk Tools

Next, participants' risk/needs profiles across the risk tools were examined for possible differential patterns of predictive association with prospective offending. The frequency at which participants recidivated as a function of SAVRY and YLS/CMI risk estimates are first presented in Table 3.9. Overall, classification distributions across the three tools showed that few youth in either group originally classified as "low" risk on the instruments went on to reoffend during the follow-up period. This pattern diverged for the two groups when examining the moderate and high classification levels. While participants with an FASD diagnosis who were classified into each of these categories appeared to

recidivate at increasingly high levels, the concordance between risk classification and rates of re-offending was not as strong in the comparison group.

Table 3.9. Frequency (and Percentage) of Participants Who Recidivated as a Function of SAVRY and YLS/CMI Risk Estimates

	FASD				Comparison			
	Low	**Moderate**	**High**	**Very High**	**Low**	**Moderate**	**High**	**Very High**
SAVRY Structured Professional Judgment Ratings	*n* = 3	*n* = 6	*n* = 33	N/A	*n* = 4	*n* = 13	*n* = 20	N/A
Any Recidivism	0 (0.0%)	2 (33.3%)	21 (63.6%)		1 (25.0%)	5 (38.5%)	7 (35.0%)	
Violent Recidivism	0 (0.0%)	1 (16.7%)	10 (30.3%)		1 (25.0%)	1 (7.8%)	3 (15.0%)	
Non-Violent Recidivism	0 (0.0%)	2 (33.3%)	8 (24.2%)		0 (0.0%)	2 (15.4%)	4 (25.0%)	
Only Breaches	0 (0.0%)	0 (0.0%)	6 (18.2%)		0 (0.0%)	3 (23.1%)	3 (15.0%)	
YLS/CMI Actuarial Risk Estimates	*n* = 0	*n* = 10	*n* = 30	*n* = 2	*n* = 4	*n* =16	*n* = 17	*n* = 0
Any Recidivism	-	2 (16.7%)	20 (46.3%)	1 (50.0%)	1 (25.0%)	8 (50.0%)	4 (23.5%)	-
Violent Recidivism	-	0 (0.0%)	10 (33.3%)	1 (50.0%)	1 (25.0%)	1 (6.2%)	3 (17.6%)	-
Non-Violent Recidivism	-	2 (20.0%)	8 (26.7%)	0 (0.0%)	0 (0.0%)	2 (12.5%)	4 (23.5%)	-
Only Breaches	-	0 (0.0%)	6 (20.0%)	0 (0.0%)	0 (0.0%)	6 (37.5%)	0 (0.0%)	-
YLS/CMI Professional Override Rating	*n* = 4	*n* = 5	*n* = 25	*n* = 8	*n* = 4	*n* = 14	*n* = 18	*n* = 1
Any Recidivism	0 (0.0%)	1 (20.0%)	14 (56.0%)	8 (100.0%)	1 (25.0%)	7 (50.0%)	5 (27.8%)	0 (0.0%)
Violent Recidivism	0 (0.0%)	0 (0.0%)	6 (42.9%)	5 (62.5%)	0 (0.0%)	2 (14.3%)	3 (16.7%)	0 (0.0%)
Non-Violent Recidivism	0 (0.0%)	1 (20.0%)	7 (28.0%)	2 (25.0%)	0 (0.0%)	2 (14.3%)	4 (22.2%)	0 (0.0%)
Only Breaches	0 (0.0%)	0 (0.0%)	4 (16.0%)	2 (25.0%)	1 (25.0%)	4 (28.6%)	1 (5.6%)	0 (0.0%)

Note. Percentages are calculated within the rating of risk, and participants who were incarcerated for the entire follow-up period are excluded from this table, therefore, $N = 79$ ($n_{FASD} = 42$; $n_{comp} = 37$).

In order to better understand the statistical significance of these trends and possible differences between the groups, a series of moderated hierarchical logistic regressions was conducted. Results are presented in Tables 3.10, 3.11, and 3.12 for the SAVRY, YLS/CMI, and PCL-YV, respectively, at both the bivariate (Step 1) and multivariate (Steps 2 and 3) levels. Overall, the simple or conditional effects of the SAVRY Historical subscale score, and total score, were significantly associated with recidivism amongst the combined sample of participants at the univariate level. However, this finding was significantly moderated for SAVRY total scores. Post-hoc analysis of the interaction showed that SAVRY total scores were only significantly associated with recidivism in the FASD group, $z = 2.92$, $p = .003$.

Table 3.10. Logistic Regression Analyses Testing the Predictive Validity of the SAVRY

SAVRY Scores		Regression Coefficients					
		Exp(*B*)	Wald	*p*	R^2	ΔR^2	χ^2
Historical (H)	H	1.19	5.85	.02	.11	-	6.73*
	G	1.45	.53	.46	.12	.01	7.26*
	H x G	1.38	3.91	.05	.18	.06	11.40*
Social/Contextual (SC)	SC	1.11	1.08	.29	.02	-	1.10
	G	2.14	2.66	.10	.06	.04	3.81
	SC x G	1.68	5.35	.02	.15	.13	9.65
Individual (I)	I	1.13	3.37	.07	.06	-	3.87
	G	1.84	1.55	.21	.09	.03	5.52
	I x G	1.95	8.30	.004	.27	.22***	17.95***
Total (T)	T	1.09	6.39*	.01	.12	-	7.29**
	G	1.53	.72	.40	.13	.01	8.00
	T x G	1.23	6.55*	.01	.24	.11**	15.65**
Protective (P)	P	0.72	3.53	.06	.06	-	3.85
	G	1.85	1.62	.20	.09	.03	5.48
	P x G	.71	.86	.35	.10	.01	6.34
SPJ Risk Estimate (SPJ) (L vs. M & H)	SPJ	.18	2.45	.12	.06	-	3.40
	G	2.19	2.75	.10	.10	.04	6.21
	SPJ x G	.00	.00	.99	.13	.03	8.33

*$p < .02$; [a]SPJ scores are dichotomized into two levels, including low/medium and high/very high.

Note. G = Group; $N = 79$, 21 participants were excluded from analyses because they were incarcerated during the entire follow-up period.

Table 3.11. Logistic Regression Analyses Testing the Predictive Validity of the YLS/CMI

YLS/CMI Scores		Regression Coefficients					
		Exp(*B*)	Wald	p	R^2	ΔR^2	χ^2
Prior and current offences/dispositions (1)	1	1.24	1.48	.22	.03	-	1.56
	G	2.02	2.14	.14	.06	.03	3.72
	1 x G	1.18	1.35	.25	.06	<.01	3.90
Family circumstances (2)	2	1.23	1.98	.16	.03	-	2.03
	G	2.07	2.38	.12	.07	.04	4.44
	2 x G	1.63	2.30	.13	.11	.04	6.86
Education/Employment (3)	3	1.16	1.83	.17	.03	-	1.87
	G	2.11	2.56	.11	.07	.04	4.47
	3 x G	.81	.75	.39	.09	.02	5.23
Peer relations (4)	4	.96	.001	.98	.00	-	.001
	G	2.34	3.17	.07	.05	.05	3.26
	4 x G	1.75	1.61	.20	.08	.03	4.91
Substance abuse (5)	5	1.74	8.06	.005	.16	-	9.95*
	G	2.09	2.25	.13	.19	.03	12.24*
	5 x G	2.16	3.60	.06	.25	.06	16.06*
Leisure and Recreation (6)	6	1.50	2.65	.10	.05	-	2.81
	G	2.12	2.52	.11	.09	.04	5.38
	6 x G	1.64	.92	.34	.10	.01	6.31
Personality and behavior (7)	7	1.27	3.41	.06	.06	-	3.63
	G	1.67	.97	.32	.08	.02	4.61
	7 x G	1.90	3.93	.05	.14	.06	8.90
Attitude and Orientation (8)	8	1.28	2.27	.13	.04	-	.24
	G	1.89	1.67	.20	.07	.03	4.03
	8 x G	1.86	2.81	.09	.11	.04	6.99
Total (T)	T	1.09	5.65	.02	.10	-	6.45
	G	1.57	.80	.37	.18	.08	7.26
	T x G	1.19	3.94	.05	.18	<.01	11.73*
Actuarial Risk Rating (ARR)[a]	POR	.56	1.53	.22	.03	-	1.56
	G	2.01	2.06	.15	.06	.03	3.65
	POR x G	.05	7.01	.008	.18	.12*	11.63
Professional Override Rating (POR)[a]	SPJ	2.16	2.43	.12	.04	-	2.51
	G	1.93	1.87	.17	.07	.03	4.40
	SPJ x G	35.84	7.29	.007	.22	.15*	13.98*

*$p < .02$; [a] ARR and POR scores are dichotomized into two levels, including low/medium and high/very high.

Note. G = Group; *N* = 79, 21 participants were excluded from analyses because they were incarcerated during the entire follow-up period.

Table 3.12. Logistic Regression Analyses Testing the Predictive Validity of the PCL-YV

PCL-YV Scores		Regression Coefficients					
		Exp(*B*)	Wald	p	R^2	ΔR^2	χ^2
Interpersonal (F1)	F1	.97	.06	.80	<.01	-	.06
	G	2.26	3.08	.08	.05	.04	3.22
	F1 x G	3.21	5.07	.02	.18	.13	11.34*
Affective (F2)	F2	1.14	1.21	.27	.02	-	1.22
	G	2.15	2.70	.10	.07	.05	3.97
	F2 x G	1.63	3.65	.06	.13	.06	7.85
Lifestyle (F3)	F3	1.41	8.39	.004	.16	-	9.99**
	G	1.38	.39	.53	.16	<.01	.16
	F3 x G	2.22	6.66	.01	.28	.12**	18.60***
Antisocial (F4)	F4	1.28	5.43	.02	.10	-	5.98*
	G	1.52	.68	.41	.11	.01	6.65
	F4 x G	1.15	.37	.54	.11	<.01	7.02
Total (T)	T	1.10	6.23	.01	.11	-	7.13**
	G	1.47	.57	.45	.12	.01	7.70
	T x G	1.31	7.22	.007	.25	.13**	16.58**

*p < .02. **p < .01. *p < .001.

Note. G = Group; N = 79, 21 participants were excluded from analyses because they were incarcerated during the entire follow-up period.

While the simple effect of the SAVRY Individual subscale score was not significantly associated with participant recidivism, this effect was also significantly moderated by group membership. Post-hoc analysis demonstrated that this factor was only significantly associated with recidivism in the FASD group, z = 2.94, p = .003. The SAVRY Social/Contextual scale, protective factors, and structured professional judgment risk estimates did not significantly predict prospective recidivism.

Few significant predictive associations were found between YLS/CMI scores and recidivism. At the univariate level, only Substance Abuse subscale scores were significantly association with reoffending across participants. YLS/CSI dichotomized SPJ scores (low & moderate vs. high & very high) were not significantly associated with recidivism in the overall sample. However, this finding was moderated by a significant group by SPJ score interaction, such that raters' SPJ judgments only significantly predicted recidivism in the FASD group, z = 2.53, p = .01. Lastly, the PCL-YV Lifestyle factor score, and PCL-YV total score were each significantly associated with recidivism at the univariate level across the combined sample. However, both associations were once again significantly moderated by

group, with post-hoc analyses of the interactions indicating these associations were only significant in the FASD group, $z = 2.88$, $p = .004$, and $z = 3.03$, $p = .002$, respectively.

The above findings should be qualified by the fact that OLS based inferential techniques used to predict risk are dependent on base rates of the predicted outcome. As earlier described, a series of ROC analyses was also conducted to further examine the stability of differential associations between risk indicators and recidivism in both participant groups. Results are presented in Table 3.13.

Table 3.13. Validity of the SAVRY, YLS/CMI, and PCL-YV Assessments in Predicting General Recidivism

	FASD (*n* = 42)		Comparison (*n* = 37)	
	AUC (*SE*)	**95% CI**	**AUC (*SE*)**	**95% CI**
SAVRY				
Historical	.75 (.07)**	.61 - .90	.50 (.10)	.30 - .70
Social/Contextual	.70 (.08)	.53 - .86	.40 (.10)	.20 - .60
Individual	.81 (.07) **	.68 - .94	.51 (.10)	.31 - .71
Protective Factors	.35 (.09)	.18 - .52	.47 (.10)	.28 - .66
Total Score	.81 (.07)**	.67 - .94	.51 (.11)	.30 - .72
SPJ Risk Estimate	.65 (.09)	.47 - .82	.51 (.10)	.31 - .70
YLS/-CMI				
Prior & current offenses	.56 (.09)	.40 - .75	.53 (.10)	.34 - .73
Family circumstances	.68 (.08)	.30 - .68	.49 (.10)	.30 - .68
Education/employment	.53 (.09)	.35 - .70	.64 (.10)	.45 - .83
Peer relations	.53 (.09)	.35 - .71	.38 (.10)	.19 - .54
Substance abuse	.76 (.08)**	.61 - .92	.55 (.10)	.36 - .75
Leisure and recreation	.63 (.09)	.46 - .80	.52 (.10)	.33 - .71
Personality & behavior	.69 (.08)	.53 - .68	.49 (.10)	.29 - .68
Attitude and orientation	.65 (.08)	.48 - .81	.42 (.10)	.23 - .61
Total Score	.73 (.09)	.57 - .90	.50 (.10)	.31 - .70
Actuarial Risk Rating	.66 (.09)	.48 - .83	.41 (.10)	.22 - .60
Professional Override Rating	.80 (.07)**	.66 - .93	.41 (.10)	.23 - .60
PCL-YV				
Factor 1	.62 (.18)	.45 - .79	.31 (.09)	.14 - .48
Factor 2	.67 (.08)	.51 - .84	.42 (.10)	.22 - .62
Factor 3	.84 (.06)***	.71 - .96	.46 (.10)	.26 - .65
Factor 4	.63 (.09)	.45 - .81	.61 (.10)	.42 - .80
Total Score	.79 (.07)**	.65 - .92	.44 (.10)	.25 - .63

*$p < .02$. **$p < .01$. ***$p < .001$.

Note. *N* = 79, 21 participants were excluded from analyses because they were incarcerated during the entire follow-up period. Values are Areas under the Curve for Receiver Operating Characteristics (ROC) curves. *SE* = Standard Error. CI = Confidence Interval.

Overall, results are consistent with findings from moderated logistic regression analyses, with a selection of risk indicators demonstrating good predictive associations with

general recidivism in the FASD group, but none in the comparison group. Overall, AUC values for the SAVRY Historical (AUC = .75, *SE* = .07), Individual (AUC = .81, *SE* = .07) and total scores (AUC = .81, *SE* = .07), YLS/CMI Substance Abuse (AUC = .76, *SE* = .08) and Professional Override risk estimate scores (AUC = .80, *SE* = .07), as well as PCL-YV Lifestyle (AUC = .84, *SE* = .06) and total scores (AUC = .70, *SE* = .07) were significant, indicating good predictive accuracy for these scales in youth with an FASD diagnosis.

3.4. Discussion

This study aimed to undertake a preliminary analysis of the offending trajectories, risks, and needs of youth with FASD involved in the criminal justice system. While early findings support the overrepresentation of this population in justice settings, little is known about the reasons underlying their offending patterns. Overall, a lack of knowledge in this area potentially limits the extent to which clinicians and other justice system agencies can effectively intervene to manage their risk, and thereby improve outcomes for a potentially vulnerable population of youth and young adults.

3.4.1. Criminal Justice Histories

In general, youth with an FASD diagnosis in the present study showed a wide range of commonalities with participants who did not have PAE. These included substantial formal offence histories, as well as similar patterns of offending behaviour. However, a number of important differences also emerged. First, the majority of youth with an FASD diagnosis evidenced official histories that reflected much higher offence frequency, and lower overall offence severity, relative to the comparison group. A number of possible explanations may help to account for this finding.

First, it has been suggested that youth with FASD often lack the necessary sophistication, skill, and maturity required to engage in serious forms of crime (e.g., Yuzwenko, 2009). While this explanation may be plausible for a subset of youth in the current study, it should be emphasized that many participants with an FASD diagnosis were charged with very serious violent offences, including manslaughter, aggravated assault, and robbery. Research examining the onset and severity of offending in the general adolescent population supports a number of subsets of antisocial behaviour patterns (e.g., Loeber & Farrington, 1998; Moffitt, 1993). Moffitt (1993) proposed one of the most well-supported of

these theories, originally hypothesizing that a number of important factors differentiate adolescent onset and life-course persistent young offenders, in particular, neuropsychological deficits and environmental adversity. Though more recent longitudinal findings indicate these distinctions do not appear as clear-cut as first theorized, follow-up work also suggests differences in adjustment during adulthood for the life-course persistent offenders, including problems with serious violence, mental and physical health, and economic difficulties (e.g., Odgers et al., 2008). As a group, youth with an FASD diagnosis appear to share many features with youth characterized by Moffitt's life-course persistent classification during adolescence and adulthood (e.g., Streissguth et al., 1996). However, individuals with FASD also experience a range of deficits and a wide continuum of functioning, and it is possible that multiple sub-categorizations are needed to accurately describe the offense patterns of youth with FASD diagnosis. The present findings support the need for further research focusing on the heterogeneity of this population, as well as an evaluation of more nuanced differences in their offending patterns. Further work of this nature in youth with FASD would help to craft appropriately-individualized intervention approaches.

A second explanation relates more explicitly to the neurobehavioural deficits stemming from PAE. Through poor planning, impulsivity, and limited insight, some have hypothesized that youth with an FASD diagnosis lack the sophistication to hide their offending from officials, and are simply apprehended more often than their higher functioning counterparts (e.g., Yuzwenko, 2009). The current results are somewhat consistent with this explanation. In particular, youth with an FASD diagnosis were responsible for a higher number of offences overall, as well as a higher number of less serious offences, according to official data. It is possible that this figure reflects differences in apprehension rates, with the comparison group yielding a more pronounced "dark figure of crime" effect. Youth in the comparison group also reported higher offending across categories relative to participants with FASD on the LSRO. However, further research would be required to replicate the stability of this pattern and draw reliable conclusions.

Another frequent concern raised about youth with FASD relates to difficulty learning from past failures or relating action and consequence in the context of criminal justice settings (e.g., Conry & Fast, 2000; Moore & Green, 2004; Yuzwenko, 2009). Overall, the offending patterns of youth with FASD in the present study appear to support this suggestion. More specifically, they were characterized by frequent failure to abide by

supervision conditions both retrospectively, and prospectively. There was also a trend towards more rapid recidivism in this group, further suggesting poor success at managing their behaviour in the community. Indeed, higher offense frequency and difficulty adhering to the conditions of justice-management approaches are both ingredients in the recipe characterizing a repetitive or “frequent flyer” offending pattern in this group. However, these tendencies did not apply to all participants with an FASD diagnosis, as a portion of this group was successful in desisting from ongoing involvement in the justice system in the time period both leading up to the baseline interview, as well as during the follow-up period. Future research examining features that distinguish these groups may yield important information about possible factors to target in the development of intervention approaches for youth with an FASD diagnosis.

3.4.2. Risks and Needs

Consistent with hypotheses, youth with an FASD diagnosis demonstrated substantially higher levels of both historical and current risk factors, including early maltreatment and caregiver disruption. Their risk profiles were also characterized by multiple neurobehavioural factors consistent with PAE, including impulsivity, poor self-control, short attention span, stimulation-seeking behaviours, poor problem solving, impaired emotional control, verbal and physical aggression, tantrums, anger management problems, and self-harm/past suicide attempts (understood as impulsive behaviours stemming from poor self-regulatory capacity). In light of significant cognitive and behavioural problems, as well as learning difficulties, it is not surprising they were also more likely to have a history of school failure and current disengagement from academics. Given these challenges, it is understandable that youth with FASD were rated as being less likely to comply with current risk management and intervention plans.

In spite of the disproportionately higher presence of risk factors, youth with FASD did not earn higher ratings on items signalling early behavioural problems. They also did not demonstrate an overtly high number of characteristics associated with psychopathy, such as inflated self-esteem, inadequate guilt feelings and/or poor empathy, callousness, or poor cooperation with authority figures, relative to their peers. Some early screening tools developed to assist physicians in making appropriate FASD assessment referrals are largely based on the presence of early behavioural difficulties (Goh et al., 2008). These findings raise questions about the specificity of such indicators in youth with an FASD diagnosis,

relative to other populations of young people, such as those involved in the criminal justice system. While youth with PAE did show a high number of behavioural problems relative to typically developing adolescents, these rates were comparable with the non-PAE young offenders included in the current study. Youth with an FASD diagnosis also shared commonly high rates of difficulties across social and contextual factors (e.g., engagement with delinquent peers, stress and poor coping, poor parental management, etc.). While these remain important intervention targets, they were more similar to youth without PAE than dissimilar in this regard.

Not unexpectedly, youth in the FASD group presented with many fewer traditional protective factors included on the risk assessment tools, in particular, on the SAVRY protective items. Inclusion of protective factors in the assessment of violence risk and treatment planning has recently begun to receive more interest in the adolescent risk literature (Farrington, 2007; Gilgun, Pranis, & Klein, 2000; Rennie & Dolan, 2010). Attending to positive attributes may lead to improved fit between the responsivity needs of a young offender with limited cognitive capacities, by improving fit of therapeutic relationships and increasing engagement in intervention plans (Duckworth, Steen, & Seligman, 2005; Saleebey, 1996). It is likely that many youth with an FASD diagnosis present a significant challenge to case managers and other service providers tasked with managing their behaviour in both custody and community settings. Unfortunately, a lack of protective factors identified in the current sample suggests that these professionals may have difficulty identifying protective factors or strengths upon which to build intervention plans.

Importantly, a two-pronged approach may be necessary, that includes both thinking more broadly about resiliency and protective factors in youth with FASD, as well as placing a greater emphasis on enhancing factors that appear to play an important protective role in this population. For instance, in their examination of resilience and enculturation in this sample, Rogers, Roesch, and McLachlan (2011) found positive associations between a culturally-sensitive scale designed to measure resiliency across individual, relational, community, and cultural domains, and historical offending patterns. Early work in the development of strength-based programming designed specifically for youth with FASD has also targeted more practical skills, abilities, and interests as strengths, such as mechanical aptitude, and positive affiliation with older adults and animals. Presently, research evaluating the efficacy of such programs, or the incremental benefit of targeting this type of strength remains limited. Further study of protective factors and resiliencies in youth with an FASD

diagnosis reflects an important future research direction, and may assist in the generation of better-tailored intervention and management approaches in this population.

Though a number of important differences in the risk and protective factor profiles of youth with and without an FASD diagnosis were found, only a few of these factors were helpful in differentiating future arrest rates between the groups. Factors that did appear to play an important role in the reoffending patterns of youth with an FASD diagnosis included the SAVRY Individual scale, YLS/CMI Substance Abuse scale, and PCL-YV Lifestyle factor, comprising items such as risk taking and impulsivity, substance use difficulties, anger management problems, attention deficit/hyperactivity problems, poor compliance, low interest/commitment to school, lack of goals, and irresponsibility. While it is possible that the utility of these associations is restricted to a short follow-up timeframe (e.g., differences between the groups may not be present given a longer interval), the short-term management of youth with FASD who present with these difficulties may be augmented by strategies designed to target this particular subset of needs.

3.4.3. Risk Tools

Overall, the risk tools performed surprisingly well in accurately classifying the risk level of youth with an FASD diagnosis, especially in light of a relatively short follow-up period. However, some important qualifications in the use of these tools with this population should be made. First, raters' use of the tools evidenced ceiling effects in this group. While recidivism data supported raters' conclusions that many of these youth were likely at high risk to reoffend, their homogeneity in risk ratings may be of limited utility in the real world where the purpose of risk assessment is not only to predict recidivism but also to inform risk management plans (Douglas & Kropp, 2002). When raters' were provided with an additional risk category (e.g., "very high" on the YLS/CMI, vs. only "high" on the SAVRY), their structured professional judgment ratings demonstrated better predictive validity in youth with an FASD diagnosis. This may have important implications for both making meaningful risk evaluations within high-risk youth, as well as in assisting in the allocation of higher-cost and more restrictive management and intervention approaches.

Youth with an FASD diagnosis demonstrated higher average PCL-YV total scores compared to their non-alcohol exposed peers, but these were generally lower than average scores reported across a published studies and well below the typical cut-off score of 30

used to differentiate low and high levels of psychopathic traits or features in youth using the PCL-YV (e.g., Catchpole & Gretton, 2003; Forth et al., 2003; Kosson et al., 2002; Olver et al., 2009). The instrument showed surprisingly good accuracy in differentiating youth with an FASD diagnosis who went on to reoffend during the follow-up period compared to those who did not, suggesting it may have good clinical utility in this population. However, it should be emphasized that the PCL-YV item patterns endorsed were not reflective of those traits more traditionally associated with the affective and interpersonal qualities most cardinally related to psychopathy. This pattern may be consistent with findings from research using the adult version of the tool with offenders who have intellectual disabilities suggesting the items function differentially in this population (e.g., Morrissey et al., 2010; Morrissey et al., 2005). Findings such as this suggest that the instrument scores may not hold the same relationship to the latent trait of psychopathy in various subpopulations, and may hold important limitations in the clinical interpretation of PCL-YV scores in unique populations such as youth with FASD. The present results suggest that clinicians may find the PCL-YV behavioural items helpful in making decisions about future risk in youth with FASD. However, they should be cautioned to qualify the purpose of using this instrument in this population, as the stigma associated with inappropriately affixing the label of psychopathy in an already marginalized group of youth may have significant negative outcomes. For instance, research has found that probation officers' perceptions about managing youth on their caseloads with psychopathic features impacts their views about their ability to benefit from treatment, as well as how strict they are in managing adherence to supervision conditions (Vidal & Skeem, 2007). Given that youth with an FASD diagnosis may already be a challenging population to manage in community justice settings, findings such as this underscore the extent to which caution should be exercised.

Lastly, while the risk tools performed better than expected in this sample, their utility in the context of a complete risk assessment remains limited by a lack of accurate responsivity assessment. As discussed, youth with an FASD diagnosis present with a complex constellation of neurobehavioural deficits that likely impact their ability to benefit from many traditional management approaches and intervention programs. While certain items across the risk tools highlight these deficits indirectly (e.g., compliance, the needs items on the YLS/CMI not described in the present study), in general, they do not adequately assist in the assessment of youth responsivity factors. For example, assessment of neuropsychological functioning would yield important information about a young person's

learning style, as well as his or her ability to benefit from specific intervention modalities based on limitations in general cognitive functioning, attention, social skills, and language, among other factors. This type of evaluation would also inform decisions regarding a young person's ability to adhere to compliance strategies based on deficits in executive functioning such as impulsivity and decision-making. A complete forensic assessment of a young person's risks and needs would likely need to comprise a traditional evaluation of risk, in addition to possible neuropsychological assessment, and a thorough psychological and physical assessment, based on our knowledge of the relevance of difficulties across these domains in this population. Further assessment of these issues would most certainly be required in the development and implementation of any comprehension risk assessment and management program in this population.

3.4.4. Limitations

This study was not without limitations. Most importantly, the present findings cannot be reliably generalized to the full population of youth with an FASD diagnosis. The decision to include youth with known current or recent justice-system involvement, versus all young people with FASD was intentional and strategic. Importantly, reliable rating of the various risk instruments requires access to a review of a large amount of information best accessed through official justice-system records, in addition to data acquired during interview. Second, it was not feasible to include an additional sample of youth who had not demonstrated justice-system involvement in the present study, owing largely to the difficulty of recruiting this population. Further research examining risk profiles using alternative methodologies would certainly yield important information about key protective factors and resiliencies differentiating the two groups. Finally, the majority of youth with an FASD diagnosis recruited into this study were drawn from specialized diagnostic programs that provide a number of post-assessment services designed to assist in developing appropriate support programs during their justice system involvement. On the one hand, it is possible that only the most seriously affected or high-risk youth suspected of having sustained are referred to and assessed by such clinics, given limited assessment budgets and difficulty in identifying youth for referral who do not present with overt signs of FASD (such as known PAE or physical features). Secondly, youth who attend these clinics may represent the "best" supported individuals in terms of their involvement in supportive programming. Overall, the current findings must be replicated in a broader sample of youth with FASD before firm conclusions can be drawn.

The selection of an appropriate comparison group for use in a studies aiming to compare a clinical population with “normal” or “average” group of control subjects is rife with challenges. Each option considered for the present study held both strengths and limitations in terms of drawing comparisons that would be practically useful and reliable, while also yielding results that could be generalized beyond this research. The decision to select comparison participants who reflected a high risk pattern of offending offered several advantages, including the ability to better control for the nature and severity of current offending patterns and historical risk constellations, thereby increasing the likelihood that PAE reflected one of the key factors differentiating the two groups. However, this selection strategy also limited the extent to which the present findings can be generalized beyond this subset of adolescent offenders. In spite of this selection strategy, comparison youth recruited into the present study nonetheless appeared to reflect differing levels of “representativeness” compared to provincial averages on at least one indicator (offence severity patterns). Future research employing comparative designs such as the one used in this study would benefit from recruiting a more diverse and broad-ranging sample of youth that reflect both average and high-risk subsets of the offending population.

Use of a comparison group led to another limitation in the current study. Specifically, raters were not blinded to participants’ diagnostic status. This was seen as impractical for a number of reasons, including the fact that In most cases, the overt behavioural and cognitive challenges demonstrated in the FASD sample would have cued raters’ to their group membership. Participants in the FASD sample were also expected to experience difficulty remembering and attending appointments, and as such, clinical liaison staff at the diagnostic agencies from which this sample was recruited were often involved in facilitating interviews. Nevertheless, it is possible that raters’ knowledge of participants’ diagnostic status introduced a possible source of bias in using the risk tools. In particular, their knowledge regarding the deficits and behavioural challenges commonly associated with the FASD diagnosis may have lead them to view these youth as higher risk than the comparison group. Somewhat unexpectedly, this study found poor predictive validity for the risk assessment measures in non-PAE youth. While small recidivism base rates likely played a role in this respect, it is also possible that raters’ tended to view youth in the comparison group as relatively better adjusted and lower risk in reference to the high risk levels seen in youth with FASD. Future studies of this nature may benefit from using different raters for each group under study, or by using raters without specialized knowledge of FASD. Raters’

specialized knowledge regarding the FASD diagnosis also calls into question whether or not individuals lacking this expertise could produce similarly accurate risk ratings. This question requires further empirical evaluation, but may underscore a need for additional training and education around the diagnosis to ensure reliable clinical assessment of risk in forensic settings.

Opting to recruit youth from two jurisdictions in this study yielded a number of benefits. From a practical standpoint, this allowed recruitment of a larger cohort of youth with an FASD diagnosis, and also increased the likelihood of studying adolescents with variable historical and current risk/need profiles. Canada is a large country with a diverse criminal landscape that features major jurisdictional differences in offending patterns, the use of custody, demographic differences, amongst a myriad of other factors (Brennan & Dauverne, 2011). British Columbia and Manitoba represent two diverse provinces this respect, and were thus targeted to increase the generalizability of these findings. However, regional differences did emerge that extended beyond what could be reliably controlled from a statistical perspective, such as crime severity scores within the comparison group. Recruiting a larger cohort of youth into both the FASD and comparison groups, as well as extending this research into additional jurisdictions would enable more detailed study of the contribution of any effects stemming from jurisdictionally-based differences. Early power calculations suggested a sample size of 100 would be sufficient to conduct proposed analyses, however, evaluation of the predictive validity of risk tools was limited by the number of youth who were detained over the complete follow-up period, resulting in smaller samples sizes compared to studies typically published in this area (e.g., Edens et al., 2007). Further study of this question in a larger cohort of youth, or over a longer follow-up period (thereby increasing the likely recidivism base rates in both groups) would permit a more reliable evaluation of differences in the functioning of these tools across populations.

While many studies examining the predictive validity of risk assessment profiles and tools in offenders are conducted using only retrospective evaluation, the present study had the design strength of evaluating these patterns using prospective data. However, findings regarding the differential predictive accuracy of risk tools between the two groups are nevertheless limited by reliance on only official data. Use of other forms of outcome data, such as participant self-report, or other official records, such as behaviour-logs from custody placements would enhance the reliability of these findings. In a related vein, the follow-up period selected for this study was relatively short, and may have contributed to the

disproportionate recidivism base rates between groups. Indeed, some authors have concluded that substantially lengthier follow-up periods, as long as 5 years or more, may be required to examine the stability of such effects over time by building up sufficiently high base rates to detect findings (e.g., Hemphill, Hare, & Wong, 1998; Vincent et al., 2011). However, the literature remains mixed in this respect and little guidance regarding optimal follow-up periods in risk prediction can be drawn from meta-analytic reviews (Singh, Grann, & Fazel, 2011). Additionally, recidivism base rates for general offending were comparable those reported in a recent meta analytic review of youth risk assessment studies using similar tools (Olver et al., 2009). Further, there is a growing trend within youth justice recognizing the dynamic nature of risk and needs in adolescent offenders, owing to the rapid pace at which developmental change across individual and social contexts occurs in this group. Clinicians tasked with assessing the risk of young offenders and developing appropriate management plans must practically work within short time frames, and thus the finding that these tools demonstrated at least modest predictive accuracy over a short time period lends good support for their use in short assessment and management periods.

3.4.5. Policy Implications

The relevance of FASD in the criminal justice system has recently become an important point of focus for government level legal and policy makers in Canada. For instance, the Federal and Provincial Justice Ministers officially tabled the subject at their recent (2010) national meeting in Vancouver, British Columbia. An FASD Steering Committee has also been formed as an interagency collaboration between senior Canadian Justice Department and Bar Association members. Together, they agree that additional allocation of resources must be undertaken to implement and develop programs designed to address the risks and needs of individuals with FASD who come into contact with the criminal justice system. Some of the proposed strategies include improving access to assessment for offenders suspected of PAE, and amending the legislative framework within the Canadian *Criminal Code* by adopting provisions from the *YCJA* that permit assessments (S. 34), and case conferencing (S.19) mechanisms to be undertaken within the adult system. These recommendations also propose removing mandatory minimum sentencing provisions that constrain judges' ability to devise proportional sentences for youth and adult offenders with an FASD diagnosis, via an exception clause. They also recommend limiting unnecessary conditions (bail, probation, sentencing) to accommodate the cognitive disabilities that result in unnecessary accumulation of administrative and justice breaches.

Certainly, the present results support the consideration of this diagnosis at a policy level within the Canadian justice system context. Youth with the diagnosis evidenced a substantial level of risk and need and were responsible for a high level of crime, in both volume and severity. However, results also showed important individual differences among youth with an FASD diagnosis, highlighted by differences in the severity and chronicity of offending patterns, as well as levels of risks and needs. Implementation of blanket-level policy decisions that treat all young people with an FASD diagnosis who come into contact with the criminal justice system as a unitary class would not be supported by these results (Verbrugge, 2003). Second, formal justice based policies implemented within the youth system that focus on the targeted used of diversion, alternative measures, and proportional intervention may assist in the risk management of this population. However, these findings strongly underscore the need for rehabilitation to occur within the context of cooperative interagency programs designed to deliver interventions that reach beyond the justice system, including programming at the family and school level to address the contribution of social determinants of health and development, as well as current clinical needs such as mental health treatment, vocational training, and safe housing. Lastly, youth with an FASD diagnosis shared many commonalities with the similarly high-risk youth comprising the comparison group in this research. Many of these recommendations would likely also benefit youth who have not sustained PAE, but nonetheless experience similar difficulties desisting from offending behaviour. Thus, further consideration of more generalized approaches designed to address the needs of youth with multiple factors spanning ecological levels of risk may also be an equally appropriate avenue for addressing the needs of youth with an FASD diagnosis involved in the justice system.

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3.6. Appendix.
Statistics Canada 2010 Crime Severity Weights

Violation	Weight	English Description
1110	7041.75	Murder 1st degree
1120	7041.75	Murder 2nd degree
1130	1821.56	Manslaughter
1140	23.43	Infanticide
1150	688.15	Criminal negligence causing death
1160	61.92	Other related violations causing death
1210	1411.01	Attempted murder
1220	611.13	Conspire to commit murder
1310	1047.22	Sexual assault - level 3 - aggravated
1320	678.35	Sexual assault - level 2 - weapon/bodily harm
1330	210.98	Sexual assault - level 1
1340	296.11	Other sexual violations
1345	210.98	Sexual Interference
1350	210.98	Invitation to Sexual Touching
1355	210.98	Sexual Exploitation
1356	210.98	Sexual Exploitation of a person with a disability
1360	678.35	Incest
1365	294.62	Corrupting morals of a child
1370	171.87	Luring a Child via a Computer
1375	210.98	Anal Intercourse
1380	210.98	Bestiality - Commit or compel person
1385	85.52	Voyeurism
1410	404.88	Assault - level 3 - aggravated
1420	77.38	Assault - level 2 - weapon/bodily harm
1430	23.43	Assault - level 1
1440	142.88	Unlawfully causing bodily harm
1450	988.26	Discharge firearm with intent
1455	267.43	Using firearm in commission of offence
1457	194.01	Pointing a Firearm
1460	41.55	Assault peace officer - level 1
1461	79.37	Assault Against Peace Officer with a weapon or causing bodily harm - level 2
1462	399.01	Aggravated Assault Against Peace Officer - level 3
1470	398.61	Criminal negligence causing bodily harm
1475	398.61	Trap Likely to or Causing Bodily Harm
1480	58.31	Other assaults
1510	477.42	Forcible confinement or kidnapping

Violation	Weight	English Description
1515	477.42	Kidnapping
1516	70.36	Forcible confinement
1520	1278.01	Hostage-taking
1525	1278.01	Trafficking in persons
1530	161.77	Abduction under 14, not parent/guardian
1540	66.64	Abduction under 16
1545	66.64	Removal of children from Canada
1550	23.86	Abduction under 14 contravening a custody order
1560	124.98	Abduction under 14, by parent/guardian
1610	583.32	Robbery
1611	583.32	Robbery to steal a firearm
1620	229.22	Extortion
1621	66.52	Intimidation of a justice system particiapant or a journalist
1622	66.52	Intimidation of a non-justice participant
1625	45.36	Criminal harassment
1626	17.34	Threatening or harassing phone calls
1627	46.39	Uttering threats
1628	477.68	Explosives causing death/bodily harm
1629	321.94	Arson - disregard for human life
1630	143.4	Other violent violations
2110	144.85	Arson
2120	186.99	Breaking and entering
2121	186.99	Breaking and entering to steal firearm
2125	186.99	Break and enter to steal a firearm from a motor vehicle
2130	139.45	Theft over $5,000
2131	84.44	Theft of motor vehicle over $5,000
2132	139.45	Theft over $5,000 from a motor vehicle
2133	139.45	Shoplifting over $5,000
2140	37.41	Theft $5,000 or under
2141	84.44	Theft of motor vehicle $5,000 or under
2142	37.41	Theft $5,000 or under from a motor vehicle
2143	37.41	Shoplifting $5,000 or under
2150	77.31	Possess stolen property
2160	108.74	Fraud
2165	48.23	Identity Theft
2166	87.35	Identity Fraud
2170	29.73	Mischief
2176	29.73	Mischief to religious property motivated by hate
3110	10.19	Bawdy house
3115	395.74	Living off the avails of prostitution of a person under 18
3120	273.5	Procuring

Violation	Weight	English Description
3125	208.6	Obtains or communicates with a person under 18 for purpose of sex
3130	5.8	Other prostitution
3210	1.16	Betting house
3220	1.16	Gaming house
3230	2.33	Other violations related to gaming and betting
3310	126.51	Offensive weapons: explosives
3320	48.13	Offensive weapons: prohibited
3330	48.13	Offensive weapons: restricted
3340	48.13	Firearm transfers or serial numbers
3350	48.13	Other offensive weapons
3365	265.12	Weapons trafficking
3370	180.07	Weapons possession contrary to order
3375	88.41	Possession of weapons
3380	144.27	Unauthorized importing or exporting of weapons
3390	204.61	Firearms documentation or administration
3395	44.08	Unsafe storage of firearms
3410	24.3	Fail to comply with order
3420	68.51	Counterfeiting
3430	8.92	Disturb the peace
3440	59.23	Escape or helps to escape from lawful custody
3450	24.41	Indecent acts
3455	160.21	Child pornography
3460	359.39	Corrupting morals
3470	28.81	Obstruct public/peace officer
3480	39.13	Prisoner unlawfully at large
3490	21.82	Trespass at night
3510	15.86	Fail to appear
3520	33.29	Breach of probation
3540	29.33	Utter threats to Property/Animal
3550	115.91	Advocating genocide
3560	29.33	Public incitement of hatred
3700	49.06	Unauthorized recording of a movie
3710	50.26	Offences against public order (Part II *CC*)
3711	50.26	Property or service for terrorist activity
3712	50.26	Freezing of property, disclosure, audit
3713	50.26	Participate in activity of terrorist group
3714	66.52	Facilitate terrorist activity
3715	143.73	Commission or instructing to carry out terrorist activity
3716	50.26	Harbour or conceal terrorist
3717	143.73	Hoax terrorism
3720	44.08	Firearms and other offensive weapons (Part III CC)

Violation	Weight	English Description
3730	48.38	Other offences against the administration of law and justice (Part IV CC)
3740	246.07	Sexual offences, public morals and disorderly conduct (Part V CC)
3750	41.77	Invasion of privacy (Part VI CC)
3760	50.44	Disordely houses, gaming and betting
3770	66.22	Offences against the person and reputation (Part VIII CC)
3780	185.49	Offences against rights of property (Part IX CC)
3790	109.29	Fraudulent transactions relating to contracts and trade (Part X CC)
3810	15.8	Wilful and forbidden acts in respect of certain property (Part XI CC)
3820	265.45	Offences relating to currency (Part XII CC)
3825	362.48	Proceeds of crime (Part XII.2 CC)
3830	214.98	Attempts, conspiracies, accessories (Part XIII CC)
3840	642.5	Instruct offence for criminal organization
3841	485.88	Commit offence for criminal organization
3842	349.48	Participate in activities of criminal organization
3890	137.18	All other *Criminal Code* (includes Part XII.1 CC)
4110	10.67	Heroin - possession
4120	10.67	Possession - cocaine
4130	10.98	Other Controlled Drugs and Substances Act - possession
4140	6.71	Possession - cannabis
4150	10.67	Possession- Methamphetamines (Crystal meth)
4160	10.67	Possession- Methylenedioxyamphetamine (Ecstacy)
4210	136.04	Heroin - trafficking
4220	136.04	Cocaine - trafficking
4230	138.88	Other Controlled Drugs and Substances Act - trafficking
4240	52.82	Cannabis - trafficking
4250	136.04	Methamphetamines (Crystal meth) - trafficking
4260	173.37	Methylenedioxyamphetamine (Ecstacy) - trafficking
4310	92.86	Heroin - importation and exportation
4320	92.86	Cocaine - importation and exportation
4330	92.86	Other Controlled Drugs and Substances Act - importation and exportation
4340	92.86	Cannabis - importation and exportation
4350	92.86	Methamphetamines (Crystal meth) - importation and exportation
4360	173.37	Methylenedioxyamphetamine (Ecstacy) - importation and exportation
4410	128.79	Heroin - production
4420	128.79	Cocaine - production
4430	128.79	Other Controlled Drugs and Substances Act - production
4440	10.67	Cannabis - production
4450	128.79	Methamphetamines (Crystal meth) - production
4460	173.37	Methylenedioxyamphetamine (Ecstacy) - production
6100	2.67	*Bankruptcy Act*
6150	2.67	*Income Tax Act*

Violation	Weight	English Description
6200	6.7	*Canada Shipping Act*
6250	83.04	*Canada Health Act*
6300	13.77	*Customs Act*
6350	13.77	*Competition Act*
6400	10.76	*Excise Act*
6450	23.53	*Youth Criminal Justice Act*
6500	41.79	*Immigration and Refugee Protection Act*
6550	30.49	*Firearms Act*
6560	36.92	*National Defense Act*
6900	83.04	Other federal statutes
9110	248.33	Dangerous operation - causing death
9120	153.62	Dangerous operation - causing bodily harm
9130	88.89	Dangerous operation of motor vehicle, vessel or aircraft
9131	640.28	Dangerous operation evading police - causing death
9132	497.47	Dangerous operation evading police - causing bodily harm
9133	124.61	Dangerous operation of motor vehicle evading police
9210	636.31	Impaired operation - causing death
9215	636.31	Impaired operation (drugs) - causing death
9220	187.37	Impaired operation - causing bodily harm
9225	187.37	Impaired operation (drugs) - causing bodily harm
9230	13.44	Impaired operation of motor vehicle, vessel or aircraft
9235	13.44	Imp operation (drugs) vehicle,vessel,aircraft
9240	22.75	Impaired operation - failure to provide breath sample
9245	22.75	Failure to comply or refusal (drugs)
9250	33.19	Impaired operation - failure to provide blood sample
9255	33.19	Failure to provide blood sample (drugs)
9310	61.6	Failure to stop or remain
9320	58.29	Driving while prohibited
9330	52.25	Other *Criminal Code* traffic violations
9410	640.28	Causing death by criminal negligence while street racing
9420	316.05	Causing bodily harm by criminal negligence while street racing
9430	640.28	Dangerous operation causing death while street racing
9440	316.05	Dangerous operation causing bodily harm while street racing
9450	23.95	Dangerous operation of motor vehicle while street racing

Note. Procedures describing the calculation of Crime Severity Weights for 2010 can be reviewed in Wallace, Turner, Babyak, & Matarazzo (2009) and Babyak, Alavi, Collins, Halladay, & Tapper (2009).

4. Conclusions

4.1. Introduction

The overrepresentation of youth and young adults with a diagnosis of fetal alcohol spectrum disorder (FASD) has become an increasingly important focus among clinicians and policy-makers in Canada (e.g., Burd, Fast, Conry & Williams, 2011; Canadian Bar Association, 2011; Roach & Bailey, 2010; Spencer, 2011). It is thought that young people affected by prenatal exposure to alcohol (PAE) represent a particularly vulnerable subset of offenders and defendants across all spheres of the justice system, owing at least in part, to the neurobehavioural deficits commonly associated with the FASD diagnosis (Conry & Fast, 2000). This dissertation examined the legal experiences and psycholegal abilities of a sample of Canadian adolescents and young adults with an FASD diagnosis, relative to a comparison group of justice-involved youth without PAE in order to better understand these vulnerabilities. A second focus of this research evaluated the criminal justice histories, and risk/need profiles of youth with an FASD diagnosis in order to better understand their involvement in criminal behaviour, as well as to identify possible targets for intervention to reduce their overall risk level. The relevant results and conclusions were discussed in detail in each chapter. In this section, the major findings are summarized and key areas for future research are outlined.

4.2. Police Interrogation Experiences and Psycholegal Abilities

Overall, youth with an FASD diagnosis shared a number of commonalities with youth who were not suspected of having sustained PAE. Both groups of youth shared similar past interrogation experiences, and reported a high number of previous false confessions, underscoring the importance of the vulnerability of young suspects in this regard. However, youth with an FASD diagnosis demonstrated considerably poorer performance across all psycholegal abilities measured, indicating an increased risk for poor comprehension of their

arrest rights prior to interrogation or providing a statement, as well as limited understanding, appreciation, and ability to community the information required to successfully navigate the trial process. While it is important to bear in mind that not all youth with an FASD diagnosis are likely to experience a significant degree of deficit in these areas, professionals including police officers, lawyers, judges and forensic mental health professionals should be aware of their increased likelihood of deficits in these areas. This finding raises the importance of ensuring appropriate training of these personnel, particularly in light of recent concerns expressed about a lack of knowledge about FASD across disciplines (Burd et al., 2011; Roach & Bailey, 2010; Wedding et al., 2007).

4.3. Offending Histories

On the whole, youth with and without an FASD diagnosis in the current study presented with extensive criminal histories dating back to early adolescence according to official records. Their offending patterns were quite similar across many indicators, and offending typologies did not emerge following a broad level analysis. However, this trend was marked by a few exceptions. In particular, youth with an FASD diagnosis presented with significantly more official charges and convictions, though on average, non-diagnosed youth were charged with more serious crimes. Unfortunately, the reasons underlying these differences remain unclear, and could be the product of many factors beyond actual differences in offending patterns between the groups, such as differential apprehension rates by police (e.g., getting caught more often due to a lack of sophistication and planning skills in the FASD cohort), or differential charge and conviction rates (over or under charging, or differential use of diversion and/or alternative measures). Further research is required to better understand these differences in trend, by both examining these issues in a larger cohort of youth, as well as by following youth prospectively and including multiple measurement methodologies, including self-report.

These results also highlight the significant costs associated with offending patterns demonstrated in this cohort of young people. While provisions implemented under the *Youth Criminal Justice Act* (*YCJA*, 2003) were designed to ensure that restrictive measures such as incarceration are used as a last resort in youth defendants, adolescents from both the FASD and comparison groups in this study spent a substantial length of time in custody, both awaiting adjudication, and following sentencing. This, combined with the sheer volume

of official charges accrued by both cohorts of adolescent offenders, underscores the substantial economic impact of offending patterns in high-risk Canadian youth. Hopefully, this finding spurs future research examining alternative measures for managing and reducing risk in these, and other similar populations of young people.

4.4. Risk and Protective Factor Profiles

This study found very high rates of risk factors and needs associated with adolescent offending in both groups studied. However, as expected, youth with an FASD diagnosis demonstrated considerably higher levels of risk and need across individual and clinical spheres. While few factors differentiated risk patterns between the groups, the current results speak to the importance of continuing this line of research in order to better understand the risk profiles associated with an FASD diagnosis. The very high level of risk and need displayed by the majority of youth in the FASD group suggests that ground level case managers such as probation officers and other forensic clinicians may be routinely required to implement the most restrictive management approaches. Again, the combined intervention and management costs of programs such as intensive supervision models, one-to-one supportive housing placements for youth who cannot be managed in more traditional settings such as group homes, and other programs are very high. Further, access to these programs and other intensive resources tends to be quite limited. More research examining the effectiveness of such programs in addressing the needs of youth with comparably high risk and needs patterns, as well as other neurobehavioural limitations that may affect their ability to benefit from such programming, is very much needed at this time.

4.5. Predictive Validity of the Risk Instruments

This dissertation undertook the first known examination of the predictive validity of three commonly used risk assessments tools in youth with FASD: the Structured Assessment of Violence Risk in Youth (SAVRY; Borum, Bartel, & Forth, 2003), the Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge, Andrews, & Leschied, 2002), and the Psychopathy Checklist—Youth Version, (PCL-YV; Forth, Kosson, & Hare, 2003). In spite of a limited sample size and a short follow-up period, the tools performed relatively well in achieving accurate predictions of prospective offending, particularly in

adolescents with an FASD diagnosis. However, it remains unclear whether specialized knowledge about FASD is necessary to augment the item definitions included in each of these tools to produce clinically useful risk assessments and case management plans.. Forensic clinicians, case managers, and probation officers who plan to use these tools are reminded of the importance of conducting a complete forensic assessment that extends beyond the risk factors included in these instruments. This is particularly critical when working with a population such as adolescents with an FASD diagnosis, as the extent to which neurobehavioural and other clinical factors might moderate their risk level is not presently well understood. While further research is required to both extend and replicate these findings over a broader sample of diagnosed youth, as well as over a longer period of time, these results present promising initial evidence for continued use of these tools in this population. It is likely that providing professionals working in forensic settings with better education around the FASD diagnosis and its' relevance in criminal justice contexts would also augment their capacity to manage risk and reduce adverse outcomes in this population.

4.6. Cultural Implications

Youth with an FASD diagnosis in the present study comprised a high representation of Aboriginal youth in both jurisdictions studied. Indeed, the overrepresentation of Aboriginal persons in this diagnostic group has been the subject of much attention in recent years (e.g., Chudley et al., 2005; Tait, 2003). While a number of studies have identified significantly higher prevalence rates in rural Aboriginal communities across Canada compared to national prevalence estimates (Asante & Nelms-Maztke, 1985; Robinson, Conry, & Conry, 1987; Square, 1997; Williams, Odaibo, & McGee, 1999), it is a common and incorrect misconception that FASD is a problem that is in some way reflective of a biological or genetic predisposition in individuals with Aboriginal ancestry (Tait, 2003). To this point, there is no evidence supporting a link of this type (Chudley et al., 2005).

Importantly, all of the adverse outcomes (secondary disabilities) reported across the literature (e.g., Streissguth et al., 1996) in individuals with FASD have also been reliably observed in Canada's Aboriginal population (Royal Commission on Aboriginal Peoples, 1993, 1996; Tait, 2000, 2003; Waldram, Herring, & Kue Young, 1995). Documented difficulties include disproportionately high rates of mental health and substance abuse problems, school failure, high suicide rates, and overrepresentation in the Criminal justice

system, as well as contextual and community-level problems (see Tait, 2003, for a full review), These ongoing difficulties are ascribed, in large part, to the intergenerational effects of colonialism, and continue to impact Aboriginal communities and individuals (Tait, 2003).

Overall, these important factors hold implications for the interpretation of results discussed in the current study. First, as has been concluded by other researchers studying FASD in Aboriginal communities, caution should be taken not to draw causal links between PAE and adverse outcomes, without taking cultural differences into consideration (Johnston, 2000; Tait, 2003). An important future direction for FASD research examining such risks and needs would ideally focus on taking a culturally sensitive and informed view of the prevalence of these adverse outcomes in the Canadian Aboriginal population. Owing to both the importance of this issue, as well as the challenges of teasing apart these differences, researchers are advised to undertake this type of study in a collaborative fashion by engaging stakeholders at the individual, community, and national level (Snarch, 2004; Tait, 2003). Prevention and intervention programs can also be developed from a culturally informed standpoint, and may be more appropriate for some Aboriginal people with FASD in managing the complex challenges of overlapping risks and needs at the individual and community levels (Tait, 2003).

4.7. Implications for Intervention

Results from this research certainly highlight the extensive intervention and support needs of adolescents and young adult with an FASD diagnosis involved in the youth justice system. These needs spanned multiple levels, ranging from the possibility of increased availability of legal supports during the arrest and police investigation process, to more intensive legal services during trial, in addition to traditionally conceptualized risk management and clinical treatment programs designed to target factors associated with ongoing risk for offending behaviour and improved health outcomes. Several programs have been developed to address these issues specifically in youth with FASD, such FASD-dedicated youth accommodation legal aid counsel, FASD diagnostic and assessment programs that deal exclusively with justice-involved youth, substance abuse and classroom-based behaviour management programs designed to target dynamic risk factors, amongst a myriad of others (see Fraser, 2009; PHAC, 2011, for a review of current programming). Unfortunately, little research is available to evaluate the effectiveness of those programs

that have already been developed, and it remains unclear whether programs tailored to address the risks and needs of youth with an FASD diagnosis offer any clinical benefit over those currently available to other justice-involved youth. Conversely, there is also little evidence to support the use of traditional programming with this population. At this juncture it is difficult to make reliable recommendations about the unique intervention needs of youth with an FASD diagnosis at a group level. However, results from this research certainly support the high need for specialized intervention services tailored to address the multitude of risks and needs identified in individual adolescents.

Certainly, the target of any given intervention program is a key consideration. However, the timing and function of interventions reflect a second important dimension in planning programs to reduce the risks and social costs of FASD at both the individual and societal levels (Roesch, 1995). Given that FASD represents the leading cause of preventable disability among Canadian children (PHAC, 2005), a focus on *primary* intervention, or prevention programs, remains critical in efforts to achieve a reduction in adverse outcomes and costs associated with FASD in the criminal justice system. Programs designed to ameliorate the social and economic circumstances of vulnerable populations of women at-risk of consuming alcohol and other substances during pregnancy such as the Parent-Child Assistance Program (e.g., Grant, Ernst, & Streissguth, 1996; Grant, Ernst, Streissguth, & Stark, 2005; Rasmussen et al., 2010 based at the University of Washington, reflect an important contribution towards this end. National public awareness campaigns also figure critically in Canada's current approach toward addressing this issue.

Secondary intervention programs designed to identify children affected by PAE through early screening and diagnosis also figure importantly in the consideration of future risk management. Increasing screening and diagnostic capacity for children who are showing the signs of PAE is obviously critical. However, it will also be important to further screen children and young adolescents with an FASD diagnosis to identify those struggling with additional risks at the individual level (such as neurobehavioural difficulties that might interfere with their ability to progress in school), familial level (such as adverse care giving circumstances and economic difficulties), and social or community level (limited access to health and other social support services, and/or barriers to accessing those services, including a lack of culturally appropriate programming).

4.8. Final Conclusions

Importantly, it should be emphasized that results across all areas examined underscore the heterogeneity of individual youth within this broad spectrum of disability, as well as many overarching similarities identified with other high-risk youth who do not have a known history of alcohol exposure. Overall, this study represents one of the first to examine these questions from an empirical standpoint in justice-involved youth with an FASD diagnosis. It presents many new avenues for future research, and in particular, provides support for large-scale empirical study of these questions in order to better understand the factors underlying identified vulnerabilities in the context of formal criminal justice procedures, their overrepresentation in the Canadian criminal justice system, and barriers to risk reduction in this population.

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