

Running head: PSYCHOLEGAL ABILITIES AND FASD

Evaluating the Psycholegal Abilities of Young Offenders with Fetal Alcohol Spectrum Disorder

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Law and Human Behavior

DOI: <http://dx.doi.org/10.1037/lhb0000037>

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PSYCHOLEGAL ABILITIES AND FASD

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This paper is based on the first author's dissertation. Dr. McLachlan received the American Psychology-Law Society (APA Div. 41) 2012 Dissertation Award for this research. This study was supported by grants from the Canadian Foundation on Fetal Alcohol Research, the Michael Smith Foundation for Health Research, and the Social Sciences and Humanities Research Council of Canada. This research would not have been possible without the assistance of the Manitoba FASD Youth Justice Program and the Asante Centre for Fetal Alcohol Syndrome. We offer our sincere appreciation to the participants who gave their time, often overcoming substantial challenges to attend interviews.

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Abstract

Individuals with a diagnosis of fetal alcohol spectrum disorder (FASD) experience a range of physical, cognitive, and behavioral deficits thought to interfere with their ability to competently navigate the arrest, interrogation, and trial process. This study examined the psycholegal abilities of young offenders with FASD, including their understanding and appreciation of *Miranda* rights, and adjudication capacities (factual knowledge of criminal procedure, appreciation of the nature and object of the proceedings, ability to participate in a defense and communicate with counsel). Two groups of young offenders (50 with FASD and 50 without prenatal alcohol exposure) completed Grisso's *Instruments for Assessing Understanding and Appreciation of Miranda rights* and the *Fitness Interview Test-Revised* in order to assess overall rates of impairment in youth with FASD, as well as differences between the groups. Potentially important predictors of psycholegal abilities were also evaluated. Results indicated the majority of young offenders with FASD (90%) showed impairment in at least one psycholegal ability, and rates of impairment were significantly higher than the comparison group. However, considerable within-group variability was observed. IQ and reading comprehension emerged as robust predictors of participants' psycholegal abilities; while the FASD diagnosis differentiated participants' scores on the FIT-R. These findings underscore the importance of individualized and comprehensive forensic assessments of psycholegal abilities in this population when warranted. Additional system level strains for this population are discussed, including problems in approaching competency remediation, and the potentially growing need for accommodation and forensic assessments in the face of limited financial and professional resources in legal settings.

Keywords: Fetal alcohol spectrum disorder; psycholegal abilities; juvenile justice

Evaluating the Psycholegal Abilities of Young Offenders with Fetal Alcohol Spectrum Disorder

North American legal tradition has a long-standing history of ensuring procedural protections for individuals who come into contact with the criminal justice system. Safeguards are particularly important in cases where individuals are vulnerable, such as youth, those with mental illness, or diminished mental capacity (Grisso, 2003; Ryba & Zapf, 2011). More recently, individuals with *fetal alcohol spectrum disorder* (FASD) have been identified as a potentially vulnerable group of offenders in the context of a criminal prosecution owing to substantial cognitive, behavioural, and social challenges commonly seen in those with the diagnosis (Conry & Fast, 2000; Gagnier, Moore, & Green, 2011; Verbrugge, 2003; Roach & Bailey, 2010). Resolutions recently passed by both the American (2012) and Canadian (2011) Bar Associations underscore the attention FASD is presently garnering in justice policy in North America. Both resolutions emphasize the need to increase awareness and respond more effectively to offenders with FASD. However, little empirical evidence is available to guide policy decisions. The present study sought to explore the extent to which young offenders with FASD are able to benefit from two forms of procedural protection under the law. These included exploration of the right to understand and appreciate arrest warnings (referred to as *Miranda* warnings in the US), and the right to be tried only when deemed capable of understanding and appreciating the nature and object of legal proceedings, and the ability to communicate with counsel.

Alcohol-related disorders captured under the diagnostic continuum of FASD are characterized by a range of deficits stemming from prenatal alcohol exposure (PAE, Chudley et al., 2005; Sokol, Delaney-Black, & Nordstrom, 2003). Fetal alcohol syndrome (FAS) represents the most pervasive level of impairment across physical, facial, and neurobehavioral domains of functioning. Partial FAS (pFAS) represents a lesser degree of these impairments, while Alcohol Related Neurodevelopmental Disorder (ARND) reflects significant impairment in brain functioning, without the hallmark facial or physical abnormalities prominent in FAS and pFAS. FASD does not carry a unique phenotype of neurobehavioral deficits, however individuals with the diagnosis frequently exhibit an array of cognitive, behavioural, and social problems (see Table 1 for a summary). 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. Individuals with FASD also experience high rates of comorbid mental health problems (such as depression, psychotic disorders, and substance abuse), with estimates ranging as high as 90% (Famy, Streissguth, & Unis, 1998; O’Connor et al. 2002).

--Insert Table 1 about here--

Prevalence estimates suggest FASD occurs with alarming frequency in North America, around 9.1 per 1000 births, and between 1 and 3 per 1000 births for FAS, making it the most common form of preventable brain injury (Sampson et al., 1997; PHAC, 2005). Research concerning the prevalence of individuals with FASD in correctional and forensic contexts is scarce. However, limited findings suggest individuals with FASD (largely ARND) are overrepresented in criminal justice settings, with estimates ranging from 10 to 23% (see Popova, Lange, Bekmuradov, Mihic, & Rehm, 2011, for a review). Many clinical and legal experts speculate the problem is much more pervasive and generally under-diagnosed in these settings (e.g., Burd, Rachael, Selfridge, Klug, & Juelson, 2003; Conry & Fast, 2000). No matter the

PSYCHOLEGAL ABILITIES AND FASD

specific prevalence rate, these findings suggest that justice personnel are likely to come into contact with individuals on the FASD spectrum at regular frequency across legal settings.

Research has established that younger adolescents, particularly those with cognitive deficits, show high rates of impairment in legal capacities relevant to interrogation and adjudication (e.g., Goldstein et al. 2003; Grisso, 1981; Grisso et al., 2003; McLachlan, Roesch, & Douglas, 2011; Viljoen & Roesch, 2005). In addition, several forms of psychopathology have been associated with deficits in this area, including learning disabilities, attention problems, psychosis, and externalizing behaviors (Grisso et al., 2003; LaVelle Ficke et al., 2006; Pirelli, Gottdiener, & Zapf, 2011; Ryba & Zapf, 2011; Viljoen & Roesch, 2005; Warren et al., 2003). The degree of overlap between these known risk factors, and the constellation of deficits associated with FASD is striking. It is this intersection of risk factors that provides the foundation for the hypothesis that young offenders with FASD experience difficulty competently navigating formal interrogation and adjudication procedures.

In spite of wide-ranging concerns from clinical and legal experts concerning the psycholegal abilities of offenders with FASD, research to date has not examined these issues. It remains unclear whether their psycholegal abilities are more compromised than those of other offenders, or, whether risk factors linked with deficits in this area apply equally well to offenders with FASD. This knowledge gap is problematic for several reasons. First, the likely overrepresentation of those with FASD in the justice system means police, legal professionals, and forensic clinicians will encounter them frequently, but may not have appropriate knowledge to guide their practices. Second, Canadian and American courts are considering FASD at increasing rates without empirically-based evidence to assist in rendering decisions (ABA, 2012; Gagnier et al., 2011; Roach & Bailey, 2010). Lack of knowledge also makes it very difficult for policy makers to implement informed decisions, such as training for legal experts and police officers, funding court-ordered evaluations for FASD, or appropriate remediation strategies for those defendants deemed to have limited psycholegal abilities.

The Present Study

The present study examined psycholegal abilities relevant to interrogation and adjudication in young offenders diagnosed with FASD. We evaluated both overall rates of impairment on forensic assessment instruments, and also compared their performance to a group of young offenders without PAE. Research identifying overlapping risk factors for impairment informed the hypothesis that young offenders with FASD would demonstrate more significantly compromised psycholegal abilities. We also sought to assess insight and confidence about their psycholegal abilities, and hypothesized young offenders with FASD would demonstrate more limited skills in this area. Next, we assessed whether risk factors for poor psycholegal abilities were equally predictive of performance in youth with and without an FASD diagnosis, as well as whether the diagnosis itself was predictive of impairment. Predictors were selected following a thorough review of the adolescent forensic literatures spanning risk factors for impaired rights comprehension and adjudicative capacity. Selected factors were chosen on the basis of both robust associations in the literature, as well as relevance in the context of individuals with FASD (IQ, reading comprehension skills, and criminal justice experience).

Method

Participants

Participants were 100 young offenders (19 females and 81 males) ranging in age from 12 to 23 years ($M = 17.53$, $SD = 1.59$). Participants were recruited from two Canadian provinces, including 50 young offenders diagnosed with FASD, and a comparison group of 50 young offenders who were not suspected of having sustained PAE. Participants from the FASD group were eligible to take part in the study if they had been diagnosed by an interdisciplinary team adhering to the Canadian Diagnostic Guidelines for FASD (Chudley et al., 2005), and had current or recent (within three years) involvement in the criminal justice system. Participants were eligible for the comparison group if they were not suspected of PAE and were also currently or recently involved in the justice system. Participants and/or their legal guardians, and probation officers were asked if they had any knowledge of the young person having been exposed to alcohol prenatally, and justice files were reviewed for mention of suspected PAE. 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' legal histories. Participants aged 18 and older do not technically fall under the jurisdiction of *Youth Criminal Justice Act*, Canada's juvenile justice statute, however, young adults (18-23) were included in this study for several reasons. First, the intractability of the neurobehavioral deficits associated with FASD led us to suspect that young adults with FASD would experience challenges in their psycholegal abilities comparable to their younger counterparts. Second, many of these young adults recently navigated the youth justice system and information about their psycholegal abilities can lend important knowledge about the capacities of older adolescents approaching early adulthood. Legal provisions for rights comprehension and adjudicative capacity apply similarly to young adults under the study jurisdiction, with the exception that adults are not permitted an adult caregiver to be present during police interrogation.

--Insert Table 2 about here--

Sample characteristics are presented in Table 2. Participants in the FASD group were predominantly diagnosed with ARND ($n = 44$, 88.0%), consistent with expected rates in a justice-involved sample (e.g., Fast, Conry, & Looock, 1999). Participants from the two groups did not differ significantly with respect to age or gender. As expected, those in the FASD group earned lower scores on academic and intellectual measures. 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 young offenders in the FASD group received their first formal charge one year earlier than the comparison group. Participants were sampled from both community and custody settings at even rates, and were evenly distributed on adjudication status.

A number of site-based differences were found between participants recruited into the comparison group, including age, average grade reading level, IQ, adjudicative status and custody status. Specifically, those recruited from the first site were older ($M = 17.69$, $SD = 1.19$ vs. $M = 16.86$, $SD = 1.41$), $t(48) = -2.12$, $p = .04$, $d = .61$, $Mdiff = -.84$, 95% CI [-1.63, -.04], had a lower reading grade level ($M = 7.06$, $SD = 2.68$ vs. $M = 9.63$, $SD = 2.94$), $t(48) = 2.96$, $p = .005$, $d = .85$, $Mdiff = .87$, 95% CI [.82, 4.31], and lower IQ scores ($M = 87.08$, $SD = 10.72$, vs.

PSYCHOLEGAL ABILITIES AND FASD

$M = 96.21$ $SD = 10.25$), $t(48) = 2.74$, $p = .009$, $d = .79$, $M_{diff} = 3.34$, 95% CI [2.42, 15.84]. Significantly more participants from the first site were awaiting adjudication (61.1%, $n = 22$), $\chi^2(1, N = 100) = 8.85$, $p = .003$, $\phi = -.10$, 95% CI [-.16, -.64] and in custody at the time of study recruitment (69.4%, $n = 25$), $\chi^2(1, N = 100) = 15.72$, $p < .001$, $\phi = .40$, 95% CI [.10, .62]. However, none of these characteristics were differentially related to rights comprehension or adjudicative capacity scores, allowing us to collapse the samples for further analyses (these analyses are described in the “Data Analysis” section).

Procedure

Participants in the FASD group were primarily recruited from two diagnostic clinics mandated to assess young offenders. Probation officers, FASD support workers, and lawyers also made study referrals, and the project was advertised at a Canadian FASD conference. 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, enrolment procedures, and participation rates are described in Figure 1. From the total pool of 145 young offenders referred to the study, 102 were enrolled, resulting in an overall participation rate of 70.3%. This figure is generally in keeping with participation rates of other studies of justice-involved adolescents, ranging between 70% and 80% (e.g., Green, Gesten, Greenwald, & Salcedo, 2008; McLachlan et al., 2011; Schubert et al., 2004).

--Insert Figure 1 about here--

Initial contact with prospective participants was facilitated via liaison staff who first requested permission (or permission from their legal guardians, if applicable) to forward their information to the research team. Prospective participants were then extended an invitation to participate. Procedures for both the FASD and comparison groups were parallel. After obtaining informed consent, participants completed a test battery including a semi-structured interview canvassing demographic information and previous legal experiences, clinical forensic assessment measures, and intellectual and academic testing. Testing was conducted in a variety of settings, most typically at the clinic or probation office where participants were recruited. Study measures were selected to accommodate the multiple challenges individuals with FASD experience in didactic testing situations (e.g., attention problems, reading difficulties, poor frustration tolerance), breaks were offered frequently, and the protocol was administered over multiple sessions when required. Upon completion of the study protocol, participants were thanked and offered a \$25 gift card redeemable at various locations as compensation for their participation. Information about participants' legal status and offending history were coded from Provincially maintained justice databases. All study procedures were approved by the University Research Ethics Review Board and adhered to governing ethical guidelines (American Psychological Association, 2010; Canadian Psychological Association, 2000).

To ensure that our results had broader relevance, we intentionally selected measures that were not only applicable to Canada but also to the United States. For instance, we utilized Grisso's *Miranda* Instruments (1998) which were developed based on American arrest warnings, but added an additional Canadian-specific component that we had developed and tested in a prior

study (McLachlan, 2006). In addition, to measure fitness to stand trial (referred to as competence to stand trial or adjudicative competence in the US) we used the Fitness Interview Test-Revised (FIT-R), an instrument originally developed based on Canadian standards, but subsequently revised for use in the United States as well (Roesch, Zapf, & Eaves, 2006). The FIT-R thus assesses legal prongs that are included in both Canadian and American legal standards (i.e., factual understanding, rational understanding, and communication with counsel). 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 clinical forensic psychologist who is an expert in this area, and then trained both research assistants. Each examiner completed five study protocols under observation by the lead examiner to ensure accurate administration of the materials.

Measures

Wechsler Abbreviated Scale of Intelligence. The Wechsler Abbreviated Scale of Intelligence (WASI) (Psychological Corporation, 1999) is a screening instrument developed to serve as a brief and reliable measure of intelligence. The WASI can be administered to individuals ages 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 score provides the most reliable estimate of intellectual ability, this score was used in all analyses (herein referred to as IQ). Intraclass correlation coefficients (ICCs) calculated for single raters with a two-way random effects model (Model 2, McGraw & Wong, 1996) ranged from .81 (Vocabulary) to .99 (Similarities).

Wide Range Achievement Test—4th Edition. The Word Reading and Sentence Comprehension subtests from the Wide Range Achievement Test – 4th Edition (WRAT-4) (Wilkinson & Robertson, 2006) were administered to all participants as a brief measure of reading ability. The Word Reading subtest evaluates participants' letter and word decoding skills, whereas Sentence Comprehension measures an individual's ability to gain meaning from words and to understand ideas and information contained in sentences. Administration time ranges from 5 to 10 minutes depending on participants' skills. Reliability and validity of the instrument have been found to be adequate (Wilkinson & Robertson, 2006).

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

PSYCHOLEGAL ABILITIES AND FASD

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). Intraclass correlation coefficients (ICC) calculated for single raters with a two-way random effects model (Model 2, McGraw & Wong, 1996), were found to be excellent (.95 for CMR, .97 for CMV, .99 for FRI).

Canadian Rights Comprehension Supplement (McLachlan, 2006). Additional items following the content style and scoring rules of Grisso's instruments were developed to reflect warnings and language specific to the Canadian legal context. A review of local police warnings, legislation, and case law yielded two substantive differences, including warnings stipulating the right to have a parent or adult present during questioning for adolescent suspects, and the possibility of receiving an adult sentence (rather than transfer young offenders to adult court, Canadian youth courts may hand down adult sentences to adolescents aged 14 and older for certain serious offences, see Spice, Viljoen, Gretton, & Roesch, 2010 for a review). Two items were developed and administered following the original CMR and CMR-R instruments, and five additional vocabulary items were also administered. Two vocabulary items ("lawyer" and "statement") were used from a pre-publication version of Goldstein, Zelle, and Grisso's (2011) revised *Miranda Rights Comprehension Instruments* (with permission from the first author). Scoring criteria were developed in the same manner as Grisso's original instruments, following consultation with legal and clinical experts in this area. Administration of the additional items takes 5 to 10 minutes and the items are administered following each of the original instruments. The items had been previously administered to a community sample of youth (ages 12 to 19) and scoring for these items yielded good interrater reliability (McLachlan, 2006; McLachlan, Viljoen, Roesch, & Yousofi, 2009). ICCs for Canadian CMR items (.92) and CMV items (.93) were excellent in the present study.

Rights Comprehension Confidence. In order to assess participants' perceptions about their understanding and confidence about their rights, participants were asked to make self-assessments in both areas following administration of Grisso's four instruments. Two questions were asked: "How well do you think you understand the rights we just talked about?", and "How confident or sure would you feel about making decisions about those rights when speaking with police?" Responses were given on a 5-point Likert scale, with "1" indicating poor understanding/confidence and "5" indicating perfect or complete understanding/confidence.

Fitness Interview Test—Revised. The Fitness Interview Test-Revised (FIT-R) (Roesch et al., 2006) 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, appreciation of the nature and object of the proceedings, and ability to participate in one's defense and communicate with counsel). The measure includes 16 items and takes between 30 and 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). To improve clarity of interpretation relative to performance on Grisso's four instruments, participants' scores were reverse coded in all analyses, with higher scores reflecting better understanding. Research indicates the FIT-R has

PSYCHOLEGAL ABILITIES AND FASD

adequate interrater reliability and construct validity in adolescent samples (Viljoen, Vincent, & Roesch, 2006). ICCs in the present study ranged from adequate to excellent (.70 for Section 1, .93 for Section 2, and .95 for Section 3).

Data Analysis

As reported in the Participants section, significant differences between recruitment sites were found for a number of demographic characteristics (age, average grade reading level, IQ, adjudicative status, and custody status). To assess the possibility that these factors had confounding effects on participants' rights comprehension and 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 differentially related to outcomes in any series of research questions across samples. Therefore, it was possible to collapse across samples in the following analyses.

Descriptive data regarding rates of impairment for young offenders with FASD is first presented for both Grisso's Instruments (including Canadian items) and the FIT-R. Next, contrasts between the FASD and comparison groups are made using *t*-tests and Chi-square tests. Analyses assessing the significance of predictors associated with impaired psycholegal abilities, including diagnosis, were conducted in two stages to conserve statistical power. First, associations between predictors and outcomes were examined at the bivariate level using Pearson Product Moment and point-biserial correlations (as applicable depending on the scaling of variables). Only those predictors found to be significant at the bivariate level were selected for inclusion in multivariate analyses. Next, multivariate analyses were conducted using a series of hierarchical multiple regressions. In each set of analyses, 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), permitting an examination of each predictor's individual contribution to the overall predictive model while controlling for the contribution of other predictors in the model. To restrict the number of significance tests being conducted and improve generalizability of the current study findings, only Grisso's original four instruments were included in multivariate analyses.

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 study interviews (spread approximately evenly throughout data collection) 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).

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 (.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

(ϕ), 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.

Results

Rights Comprehension

Rates of Impairment. In keeping with predictions, many participants in the FASD group demonstrated impaired understanding and appreciation of their arrest rights, including both the original warnings in Grisso's instruments, as well as the Canadian warnings (see Tables 3 and 4). In examining the number of participants who earned scores of zero on at least one warning or vocabulary item from each of Grisso's three understanding instruments (CMR, CMR-R, and CMV), it was apparent that youth with FASD had considerable difficulty. More than half ($n = 30$, 60.0%) demonstrated impaired performance on the CMR instrument (defined as earning a 'zero' on one or more of the four warnings). They fared somewhat better on the relatively easier CMR-R instrument, with just over one-third ($n = 17$, 34.0%) demonstrating impaired understanding of at least one warning prong (defined as 2 out of 3 items incorrect). Finally, nearly three-quarters ($n = 36$, 72.0%) showed impaired performance on the CMV instrument (defined as a score of zero on one or more vocabulary items).

--Insert Table 3 about here--

Relative Performance. By way of prefacing contrasts between the FASD and comparison group, Table 4 shows that the comparison group earned scores across Grisso's four instruments that 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. Participants with FASD earned significantly lower scores across the four instruments, relative to the comparison group, indicating that offenders with FASD had substantial difficulty both understanding and appreciating their rights (see Table 5). As is evident, the magnitude of effects was large. Considerably more offenders from the FASD group also failed at least one item within each of the understanding instruments ($n = 42$, 84.0%), relative to the comparison group ($n = 32$, 64.0%), $\chi^2(1, N = 100) = 5.20, p = .02, \phi = .23, 94\%$ CI [.03, .36].

--Insert Table 4 about here--

Confidence ratings. Following administration of Grisso's instruments, participants were asked to rate their perceived level of rights comprehension, as well as their confidence in making decisions about those rights in the future. In spite of substantially more impaired performance across Grisso's four 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) (these differences were not significant). There was a positive association between

self-assessed understanding, and total scores on Grisso's instruments in both the FASD ($r = .38$, $p = .008$) and comparison groups ($r = .56$, $p < .001$), suggesting that in the aggregate, participants 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, young offenders in the comparison group who earned better scores on Grisso's four instruments (indexed by total scores) reported higher confidence regarding their ability to make informed waiver decisions ($r = .64$, $p < .001$). This relationship did not hold in the FASD group ($r = .27$, $p = .06$), suggesting their confidence judgments did not as accurately reflect actual understanding and appreciation of their rights.

--Insert Table 5 about here--

Predictors of Comprehension. To examine predictors associated with rights comprehension, an initial analysis of associations was undertaken at the bivariate level between predictors (IQ, reading ability, legal experience) and scores on Grisso's four instruments (see Table 6). As anticipated, a number of significant associations were evident, including IQ, average grade reading level, and group membership (FASD vs. comparison). Hierarchical multiple regressions (Table 7) were next conducted to evaluate the independent contribution of each predictor on scores across Grisso's four instruments. In keeping with hypotheses and past findings in the literature, IQ emerged as a robust independent predictor across analyses. After controlling for IQ, reading grade level was also significantly associated with scores on the CMR, CMR-R, and CMV instruments. However, group membership did not remain a significant predictor of performance on any of Grisso's instruments after controlling for the effects of IQ and reading ability. In general, young offenders 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.

--Insert Tables 6 and 7 about here--

Fitness to Stand Trial

Rates of Impairment. Participants' performance on the FIT-R is presented in Tables 3 and 5 (one participant did not complete the FIT-R, therefore $N = 99$ for all analyses). Again, in keeping with predictions, participants in the FASD group demonstrated considerable difficulty across the Understanding, Appreciation, and Communication FIT-R subscales (see table 3). Performance on the FIT-R was also 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 (Viljoen & Roesch, 2005; Viljoen & Zapf, 2002). Accordingly, the following scores were classified as impaired: ≤ 8 on Understanding, ≤ 2 on Appreciation, and ≤ 8 on Communication with Counsel (based on the adult normative sample). In total, 76.0% of young offenders in the FASD group ($n = 38$) demonstrated impaired performance on the Understanding scale, 24.0% ($n = 12$) had impaired scores on the Appreciation scale, and similarly, 24.0% ($n = 12$) had impaired scores on the Communication scale.

Relative Performance. By way of external reference, participants in the comparison group had FIT-R scores that were comparable to a youth detention sample in a U.S. study (Viljoen & Roesch, 2005). In contrasting performance between the two groups, 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 (see Table 5). They had more difficulty understanding elements of the arrest and trial process, appreciating their involvement and possible consequences of the proceedings, and adequately participating in their defense through appropriate communication with counsel, than comparison participants. Similarly, a significantly higher proportion of young offenders from the FASD group earned scores two or more standard deviations below adult norms on all three FIT-R subscales. Overall, 76% of young offenders with FASD ($n = 38$) demonstrated impairments in one or more domains on the FIT-R, compared to only 28% ($n = 14$) in the comparison group, $\chi^2(1, N = 99) = 23.08, p < .001, \phi = -.48, 95\% \text{ CI } [.30, .63]$.

Predictors of Performance. In order to examine predictors associated with FIT-R scores, an initial analysis between predictors (IQ, reading ability, justice system experience) and scores on each of the FIT-R subscales was undertaken at the bivariate level (see Table 6). In keeping with bivariate patterns of association found on Grisso's instruments, IQ, reading ability, and diagnostic group were all significantly associated with the three FIT-R subscale scores. These three predictors were next included in a series of hierarchical regression models to examine their independent contribution to scores on the FIT-R (see Table 7). Overall, IQ once again emerged as a robust independent predictor on the three FIT-R subscales. After controlling for IQ, reading grade level scores were also significantly associated with participants' scores on the Understanding and Appreciation subscales, but not on the Communication subscale. Participants' group membership remained a significant independent predictor of scores on the Understanding and Communication subscales, suggesting that some aspect of the FASD diagnosis contributed to raters' evaluation on these indicators.

Discussion

In spite of growing concerns about the overrepresentation of youth with FASD in justice settings and the potential for miscarriages of justice in this population, little empirical evidence is available to inform policy decisions. This study examined two key areas of psycholegal abilities in young offenders with FASD, namely, those relevant to rights comprehension and adjudication. The primary focus of this research was to better understand the capacities of this population as they navigate formal criminal justice procedures. Self-report and forensic assessment instruments were used to address these questions in a sample of young offenders with and without FASD. As a group, a high proportion of young offenders with FASD showed deficits in their psycholegal abilities, and rates of impairment were substantially higher in this group compared to other young offenders. These findings have a number of practical implications, underscored by the overrepresentation of offenders with the diagnosis in youth justice settings.

Many young offenders with FASD showed substantial deficits in their arrest rights comprehension, raising the question of whether they face an increased risk of providing invalid rights waivers without substantial efforts to clarify their meaning and relevance. Though U.S. case law does not require extensive clarification efforts from police (*Miranda v. Arizona, 1966*;

PSYCHOLEGAL ABILITIES AND FASD

Fare v. Michael, 1979), Canadian officers are tasked with ensuring that young suspects' understand and appreciate arrest warnings in order to secure a knowing and intelligent waiver (*R. v. L.T.H.*, 2008). Unequipped to identify vulnerable suspects, it remains unclear whether they have the necessary training or skill to accomplish this task (e.g., Owen-Kostelnik & Reppucci, 2009; Payne & Guastafarro, 2009). This may constitute an area of inquiry for forensic clinicians who are tasked with assessing the admissibility of waivers and statements in court.

The majority of young offenders with FASD (76%) showed deficits on at least one psycholegal ability relevant to the adjudicative process. 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 young offenders with FASD, who present with what are often termed invisible deficits (Streissguth et al., 1996). Offenders with FASD 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 more likely to have significant cognitive impairments, coupled with behavioural and emotional challenges that may substantially increase their risk of meeting the threshold for a finding of incompetence in court. These findings speak to the need to carefully assess these capacities in young defendants with an FASD diagnosis.

An interesting question arises when considering appropriate avenues for remediation of these deficits. Research examining adolescents' ability to benefit from remediation efforts targeting legal *knowledge* suggests that typically-developing youth have the capacity for improvement 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 legal deficits deemed easily addressed through education and/or coaching, he or she would likely be found competent to proceed to trial (Grisso, 2003; Melton, Petrila, Poythress, & Slobogin, 2007). However, even typically developing adolescents demonstrate difficulties learning information through teaching and achieving competency (e.g., Cooper, 1997; Viljoen et al., 2007) and it is unclear whether young offenders with FASD would benefit given their additional impairments in learning. Nevertheless, extra time and effort on the part of lawyers and judges to explain important case-specific concepts and court procedures is likely warranted. Intervention recommendations designed to optimize learning for young offenders with FASD might include using simple language, repeating information, ensuring attention is captured before communicating 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).

Alternatively, when deficits in *appreciation, reasoning, or communication* are present and stem at least in part from organic brain injury associated with PAE, remediation may be more complex or even impossible. This issue raises the question of how best to handle a young defendant with FASD who is found incompetent to proceed with adjudication. Administration of psychotropic medication remains the most frequently used form of intervention in remediating a defendants' ability to stand trial competently (Zapf & Roesch, 2011), though this is unlikely to be an appropriate or sufficient option in the case of organic neurobehavioral deficits. These concerns highlight several potential problems associated with triggering an assessment of

PSYCHOLEGAL ABILITIES AND FASD

adjudicative capacity. If a defendant is found incompetent and not restorable, charges may be stayed (Redding & Frost, 2002). Defendants with FASD may risk indeterminate or lengthy detention or supervision conditions where sufficient risk is established and criteria for civil commitment is met (Redding & Frost, 2002; Roach & Bailey, 2010), and alternatively, may be released when criteria for civil commitment or alternative forms of supervision are not met. In this case, appropriate legal mechanisms may not exist to supervise and manage their behaviour, leaving open the possibility of continued reoffending without means for holding them legally accountable. If estimates regarding the overrepresentation of youth with FASD in the justice system are accurate, lawyers and judges are likely to face problems such as these with increasing frequency.

Consistent with a large body of literature highlighting the importance of IQ and reading ability as risk factors for impaired rights comprehension (e.g., McLachlan et al., 2011; Viljoen & Roesch, 2005) these factors emerged as robust predictors in both groups of young offenders. This result underscores the importance of these specific cognitive risk factors, irrespective of their etiological roots. Alternatively, the FASD diagnosis did appear to play an important role in participants' understanding of the trial process and their ability to communicate adequately with counsel, above and beyond intellectual or academic deficits. Though rights comprehension and competency to stand trial have been shown to be highly correlated constructs (e.g., Viljoen & Roesch, 2005), they are still separate abilities and thus, a differential pattern of findings between the two constructs is not necessarily out of the norm. Another possible explanation for the discrepancy may stem from the assessment tools used in each area. Grisso's instruments provide an objective measurement of correct legal knowledge and appreciation of that knowledge and to correctly apply that knowledge. Alternatively, the FIT-R allows clinicians to make a comprehensive judgment of an individual's limitations via a structured professional judgment approach by through consideration of additional clinical factors observed during the evaluation, and the contextualized demands of an offender's specific legal situation (e.g., more serious and complex charges place more demands on a defendant's capacities). From a clinical perspective, this result underscores the importance of conducting a comprehensive evaluation of psycholegal abilities in the context of a forensic assessment.

In spite of substantial difficulties, it is important to highlight not all young offenders with FASD had impaired psycholegal abilities, and many demonstrated sound knowledge and appreciation. This is consistent with the general clinical literature highlighting the heterogeneity of cognitive, behavioural and emotional difficulties found in individuals with FASD and research underscoring the variability of legal skills in adolescents more generally (e.g., Davis et al., 2011; McLachlan et al., 2011; Viljoen & Roesch, 2005). Thus, while it may be important for police, lawyers, and clinicians to remain mindful of their increased vulnerability in legal contexts, it is nevertheless important to undertake an individualized approach when assessing the psycholegal abilities of a young person with FASD.

A final result worth highlighting is the limited awareness and misplaced confidence young offenders with FASD held in terms of their own legal knowledge, lending mixed support to speculation about whether they have sufficient insight to make decisions about their rights. Though many young offenders with FASD showed compromised understanding and appreciation of their rights (and at least some insight into these difficulties), as a group they tended to feel

PSYCHOLEGAL ABILITIES AND FASD

more confident about their decision-making abilities than was warranted. Combined, these factors may increase a young suspects' risk for making poor decisions based on limited understanding of their rights while expressing misplaced confidence to police or lawyers.

Limitations

This research was not without limitations. In particular, this study evaluated young offenders' *current* interrogation and adjudication-related psycholegal abilities using standardized instruments. For instance, the specific wording and complexity of arrest warnings provided to young suspects have been shown to vary dramatically between police forces and standardized measures such as Grisso's instruments may not accurately capture jurisdictionally specific warnings (e.g., Rogers et al., 2012; Rogers, Hazelwood, Sewell, Shuman, & Blackwood, 2008). By adding additional jurisdictionally-specific content to Grisso's original instruments, we hoped to increase the validity of our findings. The assessment also focused on participants' comprehension of arrest rights under ideal conditions, not understanding at the time of arrest. Factors such as legal learning during the interval between rights administration and testing, or increased stress experienced by suspects at the time of a police interrogation (e.g., Scherr & Madon, 2012) may distort scores on standardized assessment measures such as Grisso's instruments. Given that these findings were the product of testing during the "best of circumstances," it is likely that results reflect an underrepresentation of deficits in psycholegal abilities in this population. Caution should be exercised in extending these results to the real world, where additional cognitive and social demands would likely further impair their ability to understand and reason.

In rating FIT-R items, evaluators must take into consideration many skill domains that may interfere with a defendant's ability to understand, appreciate, and communicate information relevant to their trial (e.g., attention span, communication skills, ability to recall information, behavioral control/impulsivity). However, we did not explicitly assess the underlying causes of impaired psycholegal abilities (such as psychiatric symptomatology or higher order cognitive abilities). These domains must be carefully assessed and linked with identified deficits prior to rendering a clinical or legal decision about adjudicative capacity. In a related vein, we did not explicitly assess participants' ability to reason about decisions in the trial context. Canadian and American legal standards differ in their emphasis on reasoning in rules for adjudicative competency, however, it is likely that many defendants with FASD will face challenges in this area. Anecdotally speaking, young offenders in the current study often showed very concrete approaches to problem solving characterized by a lack of flexible thinking and abstraction. This is consistent with a growing literature on impaired problem solving and reasoning in adolescents with FASD (e.g., McGee, Fryer, Bjorkquist, Mattson, & Riley, 2008). Further research examining these skills in the context of legal decision-making would be of benefit.

Raters were not blinded to participants' diagnostic status. This was seen as impractical because in most cases, the overt behavioral and cognitive challenges demonstrated in the FASD sample would have cued raters to their group membership. Young offenders with FASD also required more support to attend study appointments, and as such, clinical liaison staff often facilitated interviews. Nevertheless, it is possible that rater's knowledge of diagnostic status introduced a source of bias in their assessments. Their specialized knowledge of FASD may have

led them to perceive more impairment across domains, or conversely, to have seen those without FASD as demonstrating relatively fewer deficits. The fact that both Grisso's instruments and the FIT-R use objectively anchored scoring systems likely reduced potential bias. Excellent interrater reliability scores also 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.

Lastly, this study employed a modest sample size that was thought appropriate for planned research questions and statistical analyses based on *a priori* power calculations. However, the current sample size did limit our ability to conduct higher-level predictive models, and was conservative for analyses performed. Future research replicating the present findings in a larger sample of offenders with FASD is warranted to establish the reliability of these results.

Conclusions and Future Directions

This study reflects the first attempt to empirically evaluate the psycholegal abilities of young offenders with FASD. Findings lend support to suggestions that this group may be at increased risk for misunderstanding, misappreciation, and miscommunication across arrest and trial contexts. However, not all young offenders with FASD experienced limitations, and many without the diagnosis experienced substantial deficits. Indeed, the diagnosis did not emerge as a strong predictor of impairment in the context of police interrogation, and only partially accounted for deficits in adjudicative capacities. This remains an important distinction in the face of recent policy suggestions advocating wide-ranging specialized accommodations for individuals with FASD under the law (e.g., American Bar Association, 2012; Canadian Bar Association, 2011; Spencer, 2011). It may be helpful to treat FASD as a 'marker' to assist in the identification of offenders who may benefit from an evaluation. However, the utility of tailoring legal accommodations or interventions to this specific subset of young offenders remains questionable, particularly in light of limited resources. The high number of young offenders estimated to have FASD in the justice system is likely to place a strain on limited assessment capacity, particularly given the scarce availability of clinicians qualified to undertake evaluations in this population (Burd, Fast, Conry, & Williams, 2010; Wedding et al., 2007).

This study was the first to undertake evaluation of this difficult-to-access and vulnerable population. Our decision to gather a breadth of information across multiple psycholegal domains resulted in a trade-off limiting our ability to explore possible causes underlying these impairments. While the various neurobehavioral deficits frequently associated with FASD make for a compelling explanation, lack of knowledge about *why* participants experienced such challenges limits the extent to which empirically informed solutions can be developed. For instance, if neuropsychological impairments are closely associated with deficits in psycholegal abilities, programs designed to teach understanding and appreciation may yield limited success in ameliorating deficits. A better alternative may be to implement policies that would improve access to external supports for suspects or defendants with similar needs. Further research taking a more in-depth analysis of this issue would help to inform the development of policies geared toward improving access to procedural protections for offenders with FASD.

References

- Abkarian, G. G. (1992). Communication effects of prenatal alcohol exposure. *Journal of Communication Disorders, 25*, 221-240. doi:10.1016/0021-9924(92)90017-Q
- American Bar Association (2012). *House of delegates resolutions: Resolution 112B and Report*. Washington, DC: Author. Retrieved from American Bar Association website: <http://www.abanow.org/2012/06/2012am112b/>
- American Psychological Association (2010). *Ethical principles of psychologists and code of conduct*. Retrieved from <http://apa.org/ethics/code/index.aspx>.
- Burd, L., Rachael, H., Selfridge, B. S., Klug, M. G., & Juelson, T. (2003). Fetal alcohol spectrum disorder in the Canadian corrections system. *The Journal of FAS International, e14*, 1-10.
- Burd, L., Fast, D. K., Conry, J., & Williams, A. D. (2010). Fetal alcohol spectrum disorder as a marker for increased risk involvement with corrections. *The Journal of Psychiatry and Law, 38*, 559-583.
- Canadian Bar Association (2011). *Fetal alcohol spectrum disorder in the criminal justice system: Resolution 10-02-A*. Niagara Falls, ON: Author. Retrieved from Canadian Bar Association website: www.cba.org/cba/resolutions/pdf/10-02-A.pdf.
- Canadian Psychological Association (2000). *Canadian code of ethics for psychologists – Third Edition*. Author: Ottawa, Ontario.
- Chudley, A. E., Conry, J., Cook, J. L., Looock, C., Rosales, T., & LeBlanc, N. (2005). Fetal alcohol spectrum disorder: Canadian guidelines for diagnosis. *Canadian Medical Associational Journal, 172*, S1-S21. doi:10.1503/cmaj.1040302
- Cicchetti, D. V., & Sparrow, S. S. (1981). Developing criteria for establishing interrater reliability of specific items. Applications to assessment of adaptive behavior. *American Journal of Mental Deficiency, 86*, 127-137.
- Conry, J., & Fast, D. K. (2000). *Fetal alcohol syndrome and the criminal justice system*. Vancouver, B.C.: Law Foundation of British Columbia.
- Cooper, D. K. (1997). Juveniles' understanding of trial-related information: Are they competent defendants? *Behavioral Sciences and the Law, 15*, 167-180. doi: 10.1002/(SICI)1099-0798(199721)15:2<167::AID-BSL266>3.0.CO;2-E
- Cooper, V. G., & Zapf, P. A. (2008). Psychiatric patients' comprehension of Miranda rights. *Law and Human Behavior, 32*, 390-405. doi: 10.1007/s10979-007-9099-3
- Davis, K., Desrocher, M., & Moore, T. (2011). Fetal alcohol spectrum disorder: A review of neurodevelopmental findings and interventions. *Journal of Developmental and Physical Disabilities, 23*, 143-167. doi: 10.1007/s10882-010-9204-2
- Famy C., Streissguth A. P., & Unis, A. S. (1998). Mental illness in adults with fetal alcohol syndrome or fetal alcohol effects. *American Journal of Psychiatry, 155*, 552-554.
- Fare v. Michael C., 442 U.S. 707 (1979).
- Fast, D. K., Conry, J., & Looock, C. (1999). Identifying fetal alcohol syndrome among youth in the criminal justice system. *Journal of Developmental and Behavioral Pediatrics, 20*, 370-372. doi: 10.1097/00004703-199910000-00012
- Gagnier, K. R., Moore, T. E., & Green, M. A. (2011). A need for closer examination of FASD by the criminal justice system: Has the call been answered? *Journal of Population Therapeutics and Clinical Pharmacology, 18*, e426-439.

PSYCHOLEGAL ABILITIES AND FASD

- Goldstein, N. E., Condie, L. O., Kalbeitzner, R., Osman, D., & Geier, J. L. (2003). Juvenile offenders' *Miranda* rights comprehension and self-report likelihood of offering false confessions. *Assessment, 10*, 359-369. doi:10.1007/s10979-009-9198-4
- Goldstein, N. E. S., Riggs Romaine, C., Zelle, H., Kalbeitzner, R., Mesiarik, C., & Wolbransky, M. (2011). Psychometric properties of the *Miranda Rights Comprehension Instruments* with a juvenile justice sample. *Assessment, 18*, 428 - 441. doi:10.1177/1073191111400280.
- Goldstein, N., S., Zelle, H., & Grisso, T. (2011). *Miranda Rights Comprehension Instruments*. Sarasota, FL: Professional Resources.
- Grisso, T. (1981). *Juvenile's waiver of rights: Legal and psychological competence*. New York: Plenum Press. doi: 10.1007/978-1-4684-3815-4
- Grisso, T. (1998). *Instruments for assessing understanding and appreciation of Miranda rights*. Sarasota, FL: Professional Resources Press.
- Grisso, T. (2003). *Evaluating competencies: Forensic assessments and instruments* (2nd ed.). New York: Kluwer Academic/Plenum Press.
- Grisso, T., Steinberg, L., Woolard, J., Cauffman, E., Scott, E., Graham, S., Lexcen, F., Reppucci, N. D., & Schwartz, R. (2003). Juveniles' competence to stand trial: A comparison of adolescents' and adults capacities as trial defendants. *Law and Human Behavior, 27*, 333-363. doi: 10.1023/A:1024065015717
- Green, A. E., Gesten, E. L., Greenwald, M. A., & Salcedo, O. (2008). Predicting delinquency in adolescence and young adulthood: A longitudinal analysis of early risk factors. *Youth Violence and Juvenile Justice, 6*, 323-342. doi: 10.1177/1541204008320261
- Kalbeitzner, R. (2008). Evaluating legal learning: The effects of time and development on adolescents' understanding of legal rights. (Doctoral Dissertation). Drexel University, Philadelphia, PA.
- Kalbeitzner, R., Strachan, M., Green, H., Goldstein, N. E. S., Riggs Romaine, C., Hodges, H., Kemp, K., Anumba, N., Yasuhara, K., Wolbransky, M., Shah, S., Zelle, H., Heilbrun, A., & Hart, A. (March 2008). The *Miranda Rights Education Project: Findings of a longitudinal study*. Paper presented at the annual conference of the American Psychology-Law Society, Jacksonville, FL.
- Kodituwakku, P. W. (2007). Defining the behavioral phenotype in children with fetal alcohol spectrum disorders: A review. *Neuroscience and Biobehavioral Reviews, 31*, 192-201. doi: 10.1016/j.neubiorev.2006.06.020
- LaVelle Ficke, S., Hart, K. J., & Deardoff, P. A., (2006). The performance of incarcerated juveniles on the MacArthur Competence Assessment Tool—Criminal Adjudication (MacCAT-CA). *Journal of the American Academy of Psychiatry and the Law, 34*, 360-373. doi: 10.1037/t02322-000
- Mattson, S. N., & Riley, E. P. (1997). A review of the neurobehavioral deficits in children with fetal alcohol syndrome or prenatal exposure to alcohol. *Alcoholism: Clinical and Experimental Research, 22*, 279-294. doi: 0.1111/j.1530-0277.1998.tb03651.x
- Mattson, S. N., & Riley, E. P. (2000). Parent ratings of behavior in children with heavy prenatal alcohol exposure and IQ-matched controls. *Alcoholism: Clinical and Experimental Research, 24*, 226-231. doi: 10.1111/j.1530-0277.2000.tb04595.x
- McGraw, K. O., & Wong, S. P. (1996). Forming inferences about some intraclass correlation coefficients. *Psychological Methods, 1*, 30-46. doi: 10.1037/1082-989X.1.1.30

PSYCHOLEGAL ABILITIES AND FASD

- McGee, C. L., Fryer, S. L., Bjorkquist, O. A., Mattson, S. N., & Riley, E. P. (2008). Deficits in social problem solving in adolescents with prenatal exposure to alcohol. *The American Journal of Drug and Alcohol Abuse*, *34*, 423-431. doi: 10.1080/00952990802122630
- McLachlan, K. (2006). Adolescent rights comprehension: The influence of age, intelligence, and interrogative suggestibility. (Master's Thesis). Simon Fraser University, Burnaby, British Columbia.
- McLachlan, K., Roesch, R., & Douglas, K. (2011). Examining the role of interrogative suggestibility in *Miranda* rights comprehension in adolescents. *Law and Human Behavior*, *35*, 165-177. doi: 10.1007/s10979-009-9198-4
- McLachlan, K., Viljoen, J., & Roesch, R., & Yousofi, A. (2009, March). Evaluating jurisdictionally specific rights comprehension using Grisso's *Miranda* Instruments: The importance of differences in difficulty and substantive meaning. Paper presented at the American Psychology-Law Society Conference, San Antonio, TX.
- Melton, G., Petrila, J., Poythress, N., & Slobogin, C., Lyons, P., & Otto, R. K. (2007). *Psychological evaluations for the courts: A handbook for mental health professionals and lawyers* (3rd ed.). New York: Guilford.
- Miranda v. Arizona*, 384 U.S. 436 (1966).
- Novick Brown, N., Gudjonsson, G., & Connor, P. (2011). Suggestibility and fetal alcohol spectrum disorders: I'll tell you anything you want to hear. *Journal of Psychiatry and Law*, *39*, 39-71.
- O'Connor, M. J., Shah, B., Whaley, S., Cronin, P., Gunderson, B., & Graham, J. (2002). Psychiatric illness in a clinical sample of children with prenatal alcohol exposure. *American Journal of Drug and Alcohol Abuse*, *28*, 743-754. doi: 10.1081/ADA-120015880
- Owen-Kostelnik, J., & Reppucci, N. D. (2009). Reid training and sensitivity to developmental maturity in interrogation: Results from a national survey of police. *Behavioral Sciences & the Law*, *27*, 361-369. doi: 10.1002/bsl.871
- Payne, B. K., & Guastafarro, W. P. (2009). Mind the gap: Attitudes about *Miranda* warnings among police chiefs and citizens. *Journal of Police and Criminal Psychology*, *24*, 93-102. doi: 10.1007/s11896-009-9040-4
- Public Health Agency of Canada (2005). *Fetal Alcohol Spectrum Disorder: A Framework for Action*. Ottawa: FASD Team. Retrieved from <http://www.publichealth.gc.ca/fasd>
- Pirelli, G., Gottdiener, W. H., & Zapf, P. A. (2011). A meta-analytic review of competency to stand trial research. *Psychology, Public Policy, and Law*, *17*, 1-53. doi: 10.1037/a0021713
- Popova, S., Lange, S., Bekmuradov, D., Mihic, A., & Rehm, J. (2011). Fetal alcohol spectrum disorder prevalence estimates in correctional systems: A systematic literature review. *Canadian Journal of Public Health*, *102*, 336-340.
- Psychological Corporation. (1999). *Wechsler Abbreviated Scale of Intelligence*. San Antonio, TX: Author.
- R. v. L.T.H.*, S. C. C. 49 (2008).
- Rasmussen, C., Talwar, V., Looms, C., & Andrew, G. (2008). Brief report: Lie telling in children with fetal alcohol spectrum disorder. *Journal of Pediatric Psychology*, *33*, 220-226. doi: 10.1093/jpepsy/jsm069
- Redding, R. E. (2002). Adjudicative competence in the modern juvenile court. *Virginia Journal of Social Policy & the Law*, *9*, 353-410.

PSYCHOLEGAL ABILITIES AND FASD

- Redding, R. E., Goldstein, N. E. S., & Heilbrun, K. (2005). Juvenile delinquency: Past and present. In K. Heilbrun, N. E. S. Goldstein, & R. E. Redding (Eds.), *Juvenile delinquency: Prevention, assessment, and intervention* (pp. 3–18). New York: Oxford University Press.
- Roach, K., & Bailey, A., (2010). The relevance of fetal alcohol spectrum disorder and criminal law from investigation to sentencing. *University of British Columbia Law Review*, *42*, 1-68.
- Roesch, R., Zapf, P. A., & Eaves, D. (2006). *Fitness Interview Test—Revised: A structured interview for assessing competency to stand trial*. Sarasota, FL: Professional Resource Press.
- Rogers, R., Blackwood, H. L., Fiduccia, C. E., Steadham, J. A., Drogin, E. Y., & Rogstad, J. E. (2012). Juvenile *Miranda* warnings: Perfunctory rituals or procedural safeguards? *Criminal Justice and Behavior*, *39*, 229-249. doi: 10.1177/0093854811431934
- Rogers, R., Hazelwood, L. L., Sewell, K. W., Shuman, D., & Blackwood, H. L. (1998). The comprehensibility and content of juvenile *Miranda* warnings. *Psychology, Public, Policy, & Law*, *14*, 63-87. doi: 10.1037/a0013102
- Ryba, N. L., & Zapf, P. A. (2011). The influence of psychiatric symptoms and cognitive abilities on competence-related abilities. *International Journal of Forensic Mental Health*, *10*, 29-40. doi: 10.1080/14999013.2010.550982
- Sampson, P. D., Streissguth, A. P., Bookstein, F. L., Little, R. E., Clarren, S. K., Dehaene, P., ... Graham, J. M. Jr. (1997). Incidence of fetal alcohol syndrome and prevalence of alcohol-related neurodevelopmental disorder. *Teratology*, *56*, 317-326. doi: 10.1002/(SICI)1096-9926(199711)56:5<317::AID-TERA5>3.0.CO;2-U
- Sankoh A. J., Huque, M. F., & Dubey, S. D. (1997). Some Comments on frequently used multiple endpoint adjustment methods in clinical trials. *Statistics in Medicine*, *16*, 2529-2542. doi: 10.1002/(SICI)1097-0258(19971130)16:22<2529::AID-SIM692>3.0.CO;2-J
- Schubert, C. A., Mulvey, E.P., Steinberg, L., Cauffman, E., Losoya, S., Hecker, T., Chassin, L.... Knight, G. P. (2004). Operational Lessons from the Pathways to Desistance Project. *Youth Violence and Juvenile Justice*, *2*, 237-255. doi: 10.1177/1541204004265875
- Scherr, K. C., Madon, S. (2012). You have the right to understand: The deleterious effect of stress on suspects' ability to comprehend *Miranda*. *Law and Human Behavior*, *36*, 275-282. doi: 10.1007/s10979-011-9283-3
- Sokol, R. J., Delaney-Black, V., & Nordstrom, B. (2003). Fetal alcohol spectrum disorder. *Journal of the American Medical Association*, *290*, 2996-2999. doi: 10.1001/jama.290.22.2996
- Spice, A., Viljoen, J. L., Gretton, H. M., & Roesch, R. (2010). Psychological assessment for adult sentencing of juvenile offenders: An evaluation of the RSTI and the SAVRY. *International Journal of Forensic Mental Health*, *9*, 124-137. doi: 10.1080/14999013.2010.501846
- Spencer, B. (2011). *A different kind of justice*. Canadian Bar Association National Magazine, July-August, 1-22.
- Streissguth, A., & Kanter, J. (Eds.). (1997). *The challenge of fetal alcohol syndrome: Overcoming secondary disabilities*. Washington: University of Washington Press.
- Streissguth, A. P., Barr, H. M., Kogan, J., & Bookstein, F. L. (1996). Final report to the centers for disease control and prevention on understanding the occurrence of secondary disabilities in clients with fetal alcohol syndrome and fetal alcohol effects. Seattle: University of Washington.

PSYCHOLEGAL ABILITIES AND FASD

- Verbrugge, P. (2003). *Fetal alcohol spectrum disorder and the youth criminal justice system: A discussion paper*. Ottawa, Canada: Department of Justice.
- Viljoen, J. L., Odgers, C., Grisso, T., & Tillbrook, C. (2007). Teaching adolescents and adults about adjudicative proceedings: A comparison of pre- and post-teaching scores on the MacCAT-CA. *Law and Human Behavior, 31*, 419-432. doi: 10.1007/s10979-006-9069-1
- Viljoen, J. L., & Roesch, R. (2005). Competence to waive interrogation rights and adjudicative competence in adolescent defendants: Cognitive development, attorney contact, and psychological symptoms. *Law and Human Behavior, 29*, 723-742. doi: 10.1007/s10979-005-7978-y
- Viljoen, J. L., Vincent, G. M., & Roesch, R. (2006). Assessing adolescent defendants' adjudicative competence: Interrater reliability and factor structure of the Fitness Interview Test-Revised. *Criminal Justice and Behavior, 33*, 467-487. doi: 10.1177/0093854806287317
- Viljoen, J. L., & Zapf, P. A. (2002). Fitness to stand trial evaluations: A comparison of referred and non-referred defendants. *International Journal of Forensic Mental Health, 1*, 127-138. doi: 10.1080/14999013.2002.10471168
- Warren, J. I., Aaron, J. Ryan, E., Chauhan, P., & Duval, J. (2003). Correlates of adjudicative competence among psychiatrically impaired juveniles. *Journal of the American Academy of Psychiatry and the Law, 31*, 299-309.
- Wedding, D., Kohout, J., Mengel, M. B., Ohlemiller, M., Ulione, M., Cook, K., Rudeen, K., & Bradock, S. (2007). Psychologists' knowledge and attitudes about fetal alcohol syndrome, fetal alcohol spectrum disorders, and alcohol use during pregnancy. *Professional Psychology: Research and Practice, 38*, 208-213. doi: 10.1037/0735-7028.38.2.208.
- Wilkinson, G. S. & Robertson, G. J. (2006). *Wide Range Achievement Test 4 Professional Manual*. Lutz, FL: Psychological Assessment Resources.
- Zapf, P. A., & Roesch, R. (2011). Future directions in the restoration of competency to stand trial. *Current Directions in Psychological Science, 20*, 43-47. doi: 10.1177/0963721410396798

Tables and Figures

Table 1

Neurobehavioral Deficits Associated with FASD

Cognitive	Behavioral	Social Skills
General cognitive functioning (IQ)	Impulsivity	Immaturity
Academic skills	Hyperactivity	Suggestibility
Learning and Memory	Aggression	Trust others easily
Executive Functioning	Delinquency	Desire to please others
Attention	Limited Insight	
Language & Communication	Learning from past behavior	
Motor Skills	Linking Cause and Effect	

(Abkarian, 1992; Brown & Gudjonsson, 2011; Conry & Fast, 2000; Davis, Desrocher, & Moore, 2011; Mattson & Riley, 1997, 2000; Rasmussen, Talwar, Loomes, & Andrew, 2008; Streissguth & Kanter, 1997)

PSYCHOLEGAL ABILITIES AND FASD

Table 2

Sample Characteristics by Group

	FASD	Comparison	t (χ^2)	d (ϕ)	Mean _{diff}	95 % CI	
						LL	UL
Age	17.60 ($SD = 1.84$)	17.46 ($SD = 1.30$)	.44	.09	.14	-.49	.77
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% ($n = 41$)	(.06)	(-.02)			
Female	20.0% ($n = 10$)	18.0% ($n = 9$)					
Academics							
Education	8.48 ($SD = 1.66$)	8.84 ($SD = 1.67$)	-1.08	-.22	-.36	-1.02	.30
Reading Level	5.16 ($SD = 2.20$)	7.78 ($SD = 2.96$)	-4.99***	-1.01	-2.62	-3.66	-1.58
IQ Score	79.43 ($SD = 10.73$)	89.64 ($SD = 11.27$)	-5.01***	-.93	-10.21	-14.60	-5.82
Adjudication Status							
Pre-adjudication	54.0% ($n = 27$)	46.0% ($n = 23$)	(.36)	(.06)			
Post-adjudication	46.0% ($n = 23$)	52.0% ($n = 26$)					
Custody Status							
Community	48.0% ($n = 24$)	42.0% ($n = 21$)	(.36)	(.06)			
Custody	52.0% ($n = 26$)	58.0% ($n = 29$)					
First Justice Contacts							
Age police contact	11.88 ($SD = 2.24$)	12.47 ($SD = 2.12$)	-1.34	-.27	-.59	-1.47	.28
Age charge	13.92 ($SD = 1.68$)	14.96 ($SD = 1.72$)	-3.04**	-.61	-1.02	-1.69	-.35
Sample Location							
Site 1	30.0% ($n = 15$)	28.0% ($n = 14$)	(.05)	(.02)			
Site 2	70.0% ($n = 35$)	72.0% ($n = 36$)					

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

PSYCHOLEGAL ABILITIES AND FASD

Table 3

Impairment across Grisso's Understanding Instruments and FIT-R Indices

<i>Grisso's Instruments</i>	FASD	Comparison	χ^2	ϕ	95 % CI	
	<i>n</i> (%)	<i>n</i> (%)			LL	UL
CMR	30 (60.0)	16 (32.0)	7.89**	-.28	-.08	-.45
Comb CMR	36 (72.0)	20 (40.0)	10.39**	-.32	-.13	-.49
CMR-R	17 (34.0)	4 (8.0)	10.19**	-.32	-.12	-.48
Comb CMR-R	19 (38.0)	7 (14.0)	7.48**	-.27	-.07	-.39
CMV	36 (72.0)	24 (48.0)	6.00*	-.24	-.05	-.41
Comb CMV	48 (96.0)	36 (72.0)	10.71**	-.33	-.10	-.38
FIT-R						
Understanding	38 (76.0)	14 (28.0)	23.08***	-.48	-.29	-.62
Appreciation	12 (24.0)	2 (4.0)	8.31**	-.29	-.06	-.34
Communication	12 (24.0)	2 (4.0)	8.31**	-.29	-.06	-.34

Note. Impairment scores on Grisso's understanding instruments were calculated as follows: CMR = zero on one or more warnings; CMR-R = 2 out of 3 items incorrect within any warning; CMV = zero on one or more vocabulary items. Impairment scores on the FIT-R scales include: \leq 8 on Understanding, \leq 2 on Appreciation, and \leq 8 on Communication. *N* = 100 for Grisso's Instruments, and *N* = 99 for the FIT-R.

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

PSYCHOLEGAL ABILITIES AND FASD

Table 4

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

	Current Study		Published Samples			
	FASD (<i>n</i> = 50)	Comparison (<i>n</i> = 50)	Grisso's Juveniles ^a (<i>N</i> = 431)	Pre- Adjudicative Adolescents ^b (<i>N</i> = 152)	Community Adolescents ^c (<i>N</i> = 94)	Adult Psychiatric Patients ^d (<i>N</i> = 75)
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
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, et al., 2011; ^d Cooper & Zapf, 2008.

PSYCHOLEGAL ABILITIES AND FASD

Table 5

Participants' Performance on Grisso's Miranda Instruments and Fitness Interview Test-Revised

	FASD	Comparison	<i>t</i>	Cohen's <i>d</i>	Mean _{diff}	95 % CI	
	M (SD)	M (SD)				UL	LL
<i>Grisso's Instruments</i>							
CMR	4.86 (2.02)	6.30 (1.90)	-3.78***	-.74	-1.46	-2.22	-.69
Comb CMR	6.96 (2.71)	9.18 (2.42)	-4.42***	-.87	-2.24	-3.25	-1.23
CMR-R	9.26 (1.84)	10.62 (1.19)	-4.39***	-.89	-1.36	-1.97	-.74
Comb CMR-R	14.28 (2.26)	15.74 (1.68)	-3.67***	-.87	-1.46	-2.25	-.67
CMV	5.74 (3.19)	8.20 (2.44)	-4.27***	-.87	-2.42	-3.54	-1.29
Comb CMV	11.28 (4.44)	14.82 (3.99)	-4.15***	-.85	-3.50	-5.17	-1.83
FRI	21.50 (3.83)	23.57 (3.44)	-2.79**	-.57	-2.05	-3.51	-.59
<i>FIT-R</i>							
Understanding	6.94 (2.61)	9.48 (2.25)	-5.21***	-1.05	2.54	-1.57	-3.51
Appreciation	4.04 (1.75)	5.08 (1.16)	-3.51*	.71	1.04	.45	1.63
Communication	9.66 (3.02)	11.94 (1.87)	-4.53***	.91	2.28	1.28	3.28

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). Similarly, higher scores on Grisso's four instruments indicate better performance. CMR = Comprehension of *Miranda* Rights instrument; CMR-R = Comprehension of *Miranda* Rights-Recognition instrument; CMV = Comprehension of *Miranda* Vocabulary instrument; FRI = Function of Rights in Interrogation instrument. The abbreviation "comb" following each original instrument (e.g., Comb CMR) indicates the scale including jurisdictionally specific, Canadian, content scores in addition to each original instrument score. *N* = 100 for Grisso's Instruments, and *N* = 99 for the FIT-R.

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

PSYCHOLEGAL ABILITIES AND FASD

Table 6

Bivariate Associations between Predictors and Dependent Variables

	Group	Age	IQ	Reading Level	Age First Arrest
<i>Grisso's Instruments</i>					
CMR	.36***	.03	.51***	.55***	.05
CMR-R	.41***	.03	.41***	.50***	-.05
CMV	.40***	.02	.63***	.64***	.13
FRI	.27**	.12	.42***	.41***	-.03
<i>FIT-R TOT</i>					
Understanding	.46***	.09	.57***	.65***	-.04
Appreciation	.33**	.11	.50***	.51***	-.04
Communication	.42***	-.08	.43***	.42***	.04

Note: $N = 100$ for Grisso's Instruments, and $N = 99$ for the FIT-R.

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

PSYCHOLEGAL ABILITIES AND FASD

Table 7

Linear Regression Models Predicting Scores on Grisso's Instruments and FIT-R

<i>Grisso's Instruments</i>	Regression Coefficients			Model Statistics			95% CI	
	B	SE B	β	Adj. R^2	ΔR^2	f^2	LL	UL
CMR								
Step 1: IQ	.09	.02	.51***	.25	.26***	.35	.13	.67
Step 2: Reading	.04	.02	.26**	.32	.08*	.52	.25	.95
Step 3: Group	.47	.39	.12	.35	.01	.54	.26	.98
CMR-R								
Step 1: IQ	.07	.01	.51***	.25	.25***	.35	.13	.67
Step 2: Reading	.17	.07	.29*	.29	.29*	.43	.12	.80
Step 3: Group	.66	.32	.20	.21	.31	.49	.23	.90
CMV								
Step 1: IQ	.16	.02	.63***	.39	.40***	.64	.33	1.14
Step 2: Reading	.41	.10	.37***	.47	.08***	.92	.52	1.59
Step 3: Group	.48	.52	.09	.47	.00	.96	.55	1.66
FRI								
Step 1: IQ	.13	.03	.42***	.17	.17***	.21	.05	.43
Step 2: Reading	.32	.16	.24	.19	.03	.27	.08	.54
Step 3: Group	.57	.79	.07	.19	.00	.27	.08	.54
<i>FIT-R</i>								
Understanding								
Step 1: IQ	.13	.02	.57***	.32	.32***	.47	.21	.87
Step 2: Reading	.46	.10	.48**	.44	.13**	.82	.45	1.43
Step 3: Group	1.05	.46	.19*	.46	.03*	.92	.52	1.59
Appreciation								
Step 1: IQ	.06	.01	.50***	.25	.25***	.33	.12	.64
Step 2: Reading	.17	.06	.31**	.30	.05	.45	.20	.83
Step 3: Group	.32	.30	.10	.30	.01	.47	.21	.87
Communication								
Step 1: IQ	.10	.02	.42***	.17	.18***	.22	.05	.45
Step 2: Reading	.24	.11	.25	.20	.03	.28	.09	.55
Step 3: Group	1.435	.55	.26*	.24	.05*	.37	.15	.70

Note. $N = 100$ for Grisso's Instruments, and $N = 99$ for the FIT-R.

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

PSYCHOLEGAL ABILITIES AND FASD

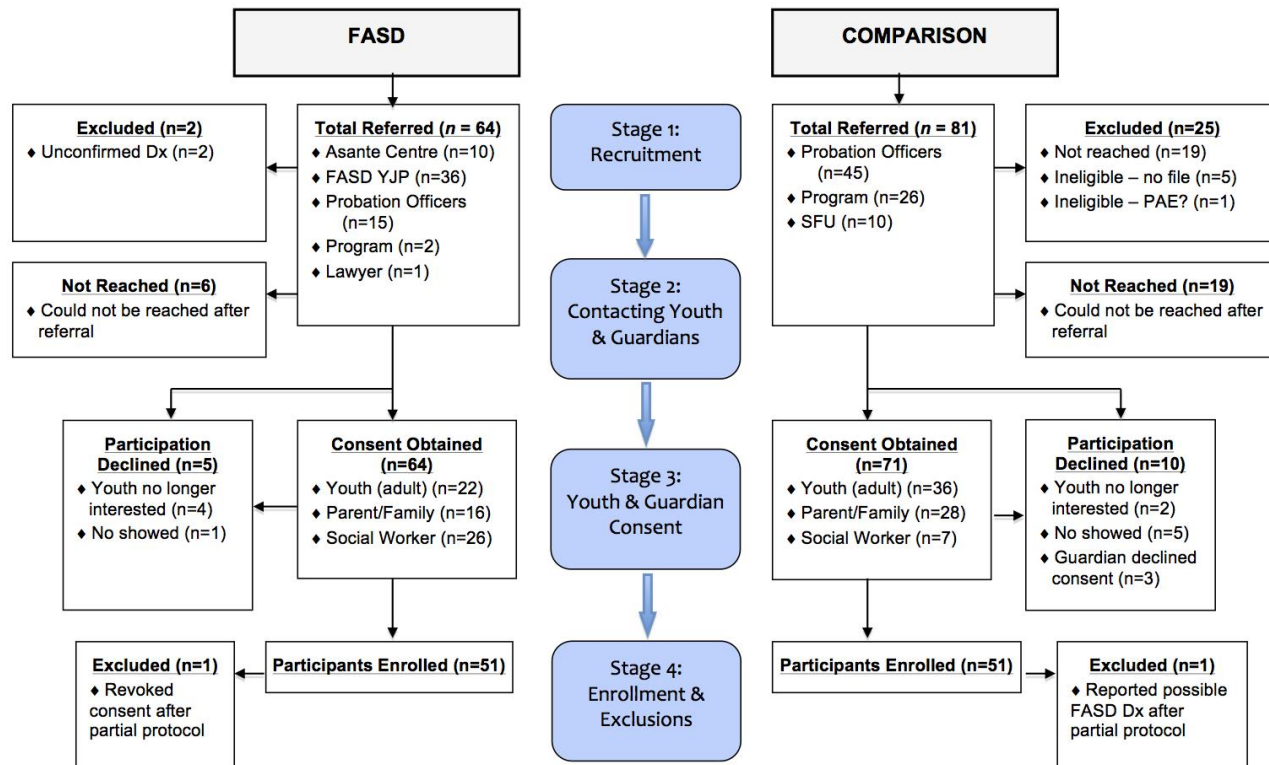


Figure 1. Study Recruitment Procedures