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Defining an Adult Screener for Fetal Alcohol Spectrum Disorder: A Study of Court Populations

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Abstract

Very little information is known about Fetal Alcohol Spectrum Disorders (FASD) within corrections populations, yet research suggests higher prevalence rates among these populations compared to the general population (Burd, Selfridge, Klug, & Bakko, 2004). In order to evaluate FASD within a corrections population, an established behavioral screener, FAS BeST (Robins & Andrews, 2009), was adapted for adults along with a selected protocol of cognitive and neuropsychological testing. The study aimed to identify testing performance and response patterns unique to individuals with an FASD in order to develop a cognitive and behavioral profile, and to evaluate the Self-Report and Adult Other version of the FAS BeST for reliability and validity. Participants included two groups: the first was recruited through a county drug court treatment program and probation offices (n = 13). The second group (n = 31) were recruited through social media Results verified reliability for the FAS BeST Self-Report and Adult Other versions as well as similarities in total scores between the Self-Report and Adult

Other for the court population. Tactor analysis of the FAS BeST: Self-Report produced 3 significant components. Reliability of the measure for the online sample was not established and factor analysis components were weak. Further research is required in order to determine the validity of the FAS BeST: Self-Report and to generate a cognitive profile based upon neuropsychological testing.

Keywords: Fetal Alcohol Spectrum Disorder, Fetal Alcohol Syndrome, Prenatal Alcohol Exposure, FAS BeST, Screener, Corrections, Court Population, Neuropsychological Testing.

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Chapter 1

Introduction

Fetal Alcohol Syndrome (FAS) appeared in the printed press for the first time in 1973 in the *Lancet* (O'Neil, 2011). Conversely, the first research to address alcohol consumption during pregnancy and the negative outcomes for infants was in 1968 (Abel, 1984). However, identification its effects on pregnancy can be traced back to the times of Aristotle and Plato (Abel, 1984). Dedicated research of Fetal Alcohol Syndrome began after 1973 when the research community placed a name to a phenomenon they observed. During the past 45 years, we learned a substantial amount about FAS with infants, children, and adolescents. Unfortunately, the research focusing on adult outcomes for those with FAS is quite limited. There has been significant speculation that adults with FAS may represent a high percentage of the incarcerated population in the U.S. (Burd, Selfridge, Klug & Bakko, 2004) and Canada (Popova, Lange, Burd, & Rehm, 2015). Despite this research, there is very little knowledge of actual prevalence rates of adults with FAS within the U.S. incarceration populations.

Challenges with Diagnoses

The Center for Disease Control and Prevention (CDC), the National Center on Birth Defects and Developmental Disabilities (NCBDDD) Fetal Alcohol Syndrome (FAS) Prevention Team, the National Task Force on Fetal Alcohol Syndrome, and Fetal Alcohol Effect (NTFFAS/FAE) created diagnostic criteria for Fetal Alcohol Syndrome (FAS; Bertrand et al., 2004). Diagnostic criteria included four major domains; facial dysmorphia (smooth philtrum,

thin vermillion border and small palpebral fissures); growth delays (prenatal or postnatal height, weight at or below the 10th percentile); central nervous system abnormalities (structural, neurological, and/or functional); and maternal exposure (confirmed or unknown; Bertrand, et al, 2004). The individual must have at least three of the four criteria domains including facial dysmorphia, growth delays and central nervous system abnormalities for the diagnosis of FAS. With a medical history, a practitioner would be able to determine the presence of both facial dysmorphia and central nervous system abnormalities. Two domains are difficult to determine in some cases, growth problems and maternal exposure. If the individual or caregiver does not know about maternal prenatal alcohol exposure and has no access to the biological mother then this domain cannot be unequivocally determined, thus, making a diagnosis of FAS and ARND challenging.

Diagnostic criteria can vary across FASD diagnostic methods or approaches. Despite attempts from different agencies such as the CDC to standardize FASD criteria, there remains widespread difference in the diagnostic criteria due to the challenges of identifying particular elements over the life span. Providers following the University of Washington diagnostic criteria, referred to as the 4 Digit Code, are required to have maternal exposure confirmation, or have knowledge that prenatal alcohol exposure did occur (Astley, 2004).

Chudley et al., (2005) reviewed the Canadian standards of FASD diagnoses. A subcommittee of the Public Health Agency of Canada's National Advisory on Fetal Alcohol Spectrum disorder reviewed methods of FASD diagnosis in order to create one standard for country of Canada (Chudley et al., 2005). The Canadian standards have seven categories including

> Screening and referral; the physical examination and differential diagnosis; the neurobehavioural assessment; and treatment and follow-up; maternal alcohol history in pregnancy; diagnostic criteria for fetal alcohol syndrome (FAS), partial FAS and alcohol-related neurodevelopmental disorder; and harmonization of Institute of Medicine and 4-Digit Diagnostic Code approaches (Chudley et al., 2005, p. S1)

that are assessed using multidisciplinary teams. The diagnostic process stresses the importance of collateral information from multiple sources such as school, hospital, social services, and/or previous evaluations conducted. In the process, a comprehensive assessment is conducted, but no specific types and/or categories of assessments were noted (see Appendix A). McLachlan, Andrew, Pei and Rasmussen (2015) evaluated preschool aged children in Canada assessed for FASD, and out of the 70 children 45 were diagnosed with FASD, however of the 25 children not diagnosed with FASD 10 children "had confirmed exposure to high levels of alcohol" (McLachlan et al., 2015, p. e112). Of the sample, only 13.9% had significantly impacted growth or facial characteristics, despite 93.3% of the sample having "significant PAE" (McLachlan et al., 2015, p. e116).

It can be very difficult for a mother to admit that she consumed alcohol during her pregnancy and in many cases children being evaluated for FASD are no longer in the custody of their biological parents for several reasons. It is less likely that an adult being evaluated for possible FAS has information about the mother's alcohol consumption at conception and during pregnancy. In one adult FASD diagnostic clinic (Temple, Ives, & Lindsay, 2015) providers designed their own procedure for the diagnosis of FASD within adults. Following the initial referral and multi-disciplinary team discussion, they make a diagnosis based on the following

criteria; evidence that the biological mother drank during pregnancy, evidence of impairment in daily living of the effected person, any missing information, and finally, testing needed. An intake was conducted followed by the assessment process including an audiology evaluation, medical exam, neurological screening, and facial measurements and photos (Temple et al., 2015). Eight domains were assessed: Motor/Sensory motor, Brain Structure, Cognition, Communication, Academics, Memory, Executive Functioning, and Daily Living Skills (Temple et al., 2015). The diagnosis is agreed upon by the multi-disciplinary team and reported to the individual. Sophr, Willms, and Steinhausen (2007) evaluated physical FAS indicators versus behavioral and intellectual indicators. They found that physical indicators can subside into adulthood, but behavioral and intellectual are better indicators in identifying FAS into adulthood. Abele-Webster, Magill-Evans, and Pei (2012) noted a number of issues involved with adult diagnosis including facial features may not be able to be identified into adulthood; growth abnormalities or deficits and motor problems may not last into adulthood. Thus, we see significant incongruence in the criteria for FASD diagnoses, especially past infancy and childhood.

The American Academy of Pediatrics (Kellerman, 2005) suggests comprehensive psychodiagnostic tests for helping evaluate for FASD in infants and toddlers (e.g., Bayley Scales of Infant Development). Comprehensive test batteries and developmental ratings (e.g., Wechsler Intelligence Scale for Children Vineland Adaptive Behavior Scales) were recommended for evaluating school age children. For adults, the American Academy of Pediatrics recommends using several comprehensive test batteries for measuring the various domains of functioning involved in FASD (e.g., Wechsler Individual Achievement Test, Wechsler Adult Intelligence

Scale, ORC Test of Reading Comprehension). The Alcohol Use Inventory was also indicated for evaluating adults with possible FAS (Kellerman, 2005). The rationale was that using such a wide range of assessments was to evaluate function across a wide range of domains including cognitive, executive, motor, attention, and social skills. Individuals with an FASD diagnosis are likely to exhibit deficits in three or more of the functional domains (Kellerman, 2005).

Comprehensive cognitive assessments are helpful in the evaluating for a diagnosis, but are not specific to FASD symptoms and behavioral patterns. This, in addition to the variability in observable symptoms, highlights the challenges to differentiating between a diagnosis of FASD from other overlapping diagnoses such as Attention Deficit Hyperactivity Disorder, Intellectual Disability, or Conduct Disorder. One screening tool that has been helpful in screening for FASD specifically is the FAS BeST (DeVries, Kenney, Waller, & Andrews, 2001). The FAS BeST has been used predominantly with children ages 4-18, but in some cases has been used with adults as old as 21 years and has been shown to be an effective screening tool in identifying the behavioral profile consistent with the diagnoses of FASD.

Prevalence of FASD

Due to the difficulty in detecting and diagnosing FAS, the number of individuals who are diagnosed is low compared to probable estimates (May & Gossage, 2001). Individuals who are diagnosed become difficult to track following high school since there is no systematic way to track outcomes once they leave the school system and/or the foster care system. May and Gossage (2001) completed a comprehensive meta-analysis of studies on the prevalence of FAS, as well as the methods by which prevalence rates were determined or measured. They evaluated four methods for gathering and determining data including: Passive Surveillance Systems

(example: hospital reports of abnormalities at birth), Clinic Based Studies (example: researchers collect data at prenatal clinics), Active Case Ascertainment Methods (example: seek and find individuals with FAS), and Prevalence Estimates by Methodology (comparisons of populations and studies). They discovered that Passive Surveillance gathers the lowest numbers of FAS cases, whereas Clinic Based Studies and Active Case Ascertainment Methods gathered the highest rates of FAS cases. May and Gossage (2001) reported a final estimate between 0.5 to 2 per 1000 live births will show FAS within a general U.S. population. This is not far from the more recent estimate from the Institute of Medicine that reports adult FASD prevalence rates of 0.5 to 3 per 1000 live births (McFarlane, 2011).

Chasnoff, Wells, & King (2015), evaluated 547 foster and adopted children. Through diagnostic evaluations, they found 156 of the 547 children met the criteria for an FASD diagnosis yet 125 were not diagnosed with FAS. Chasnoff et al. (2015) found that 80% of their sample were misdiagnosed. Of the 31 children previously diagnosed with FASD, only 13.5% were accurately diagnosed. In terms of the prevalence of FASD among child-care settings (ex. foster care, boarding school, orphanage, adoption center or child welfare system) estimates based upon a meta-analysis conducted by Lange, Shield, Jürgen, & Popova (2013) showed 6% of the children had FAS and 17% a combined prevalence of FASD within child care settings. McLachlan et al. (2015) found that of the 45 of 70 preschool aged children diagnosed with FASD, 35.6% lived with their biological parent(s) and 37.8% lived with foster parent(s).

The most recent research found even higher rates of FASD than previously predicted or indicated. May et al. (2018) evaluated 6,639 children and identified 222 cases of FASD. They determined a conservative prevalence range of FASD to be 11.3 to 50.0 per 1000 children. Using

a conservative approach, they estimated FASD prevalence to range from 1.1% to 5.0% (May et al., 2018). Popova, Lange, Probst, Gmel, & Rehm (2017) evaluated the prevalence of alcohol during pregnancy on a global scale through a meta-analysis of 328 studies and found the prevalence was between 8%-9%. Popova et al. (2017) estimated that 1 in every 67 women, who engaged in alcohol use during pregnancy, will deliver a child with FAS, thus around 119,000 children worldwide are born with FAS every year (Popova et al., 2017).

Difficulties Experienced by Those with FASD

Children and adolescents. The ability to be successful requires certain cognitive abilities, thus it is important to look at overall IQ given the effects of FASD on a person's ability to interact in society. Howell, Lynch, Platzman, Smith and Coles (2006) evaluated IQ of youth with PAE (prenatal alcohol exposure) assessing adolescents (n = 265) of low socioeconomic status, 128 of whom were prenatally exposed to alcohol, comparing outcomes to a control group (n = 53) and a comparison group (n = 84). They found that youth with PAE showed significantly lower IQ scores in comparison to the control group and the special education group (Howell et al., 2006). Mattson et al. (2013) found about 70% of children born with heavy prenatal alcohol exposure were "neurobehaviorally affected" (p. 527). If we understand that behavioral issues are prominent in those with FASD, then it is important to understand which behaviors and how they may present. Rasmussen and Bisanz (2009) assessed 29 children with FASD using the complete Delis-Kaplan Executive Function System (DKEFS). They found that the number-letter switching condition was "significantly lower than the normative mean of 10" indicating a deficit in "cognitive flexibility" (Rasmussen & Bisanz, 2009, p. 209), "significant difficulty" occurred on the color-interference test, "marked deficits on sorting the cards and describing the sorts, as well

as recognizing and describing the experimenter's sorts" were observed (p. 209), and deficits in "problem solving, verbal and spatial concept formation, and flexibility of thinking" (Rasmussen & Bisanz, 2009, p. 209). They found the children demonstrated difficulty with the Twenty Questions subtest suggesting deficits in "hypothesis testing, categorization, and verbal and spatial abstract thinking" (Rasmussen & Bisanz, 2009, p. 209). Pei, Job, Kully-Marens, & Rasmussen (2010) compared executive functioning and memory of 35 children who had a formal diagnosis of FAS to 35 children without FAS (control group). They children with an FASD diagnosis presented with deficits in both executive functioning and memory ability over the course of their development. McLachlan et al., (2015) found neurobehavioral impairments among the children diagnosed with FASD, with a majority having impairments to executive functioning and communication skills, and one-third having impaired intellectual functioning. Of the children with an FASD who were assessed ($n = 27$), the most significant impairment was to executive functioning, and other impairments included attention, memory, adaptive functioning, and communication (McLachlan et al., 2015). Of the children diagnosed with FASD, the Full Scale IQ was $M = 86.56$, which falls within the low average range (McLachlan et al., 2015).

Mattson, Crocker and Nguyen (2011) reviewed the literature to identify a possible neurobehavioral profile of individuals born with heavy prenatal alcohol exposure. They concluded that "deficits include diminished intellectual function, poor learning and memory, impaired executive and visual-spatial function, delayed motor and language development, and attention difficulties" (Mattson et al., 2011, p. 95). Researchers indicated other concerns including "these children present with increased internalizing and externalizing behavior problems, poor academic achievement, and high rates of comorbid psychiatric disorders"

(Mattson et al., 2011, p. 95). This research helps in identifying markers and patterns in tracking FAS, and provides a framework for understanding FASD in adult functioning.

Adults. Day, Helsel, Sonon and Goldschmidt (2013) conducted a longitudinal study of mothers recruited from a clinic where a number of aspects of pregnancy were evaluated. The mother and her children were followed until the children were 22 years old. The researchers conducted an adult self-report of the children at 22 years of age, and found a link between PAE and behavior problems. The Achenbach Child Behavioral Checklist (CBCL) was used to rate these behaviors. The adult children with PAE showed significant behavioral problems across all of the domains. These behavioral problems were identified in the individuals even when there was not current substance use occurring.

In Canada, Clark, Lutke, Minnes, and Ouellette-Kuntz (2004) found of 113 adults with an FASD, 45% had a history of legal trouble and 32% had, at one time or another, been confined to a hospital or a prison. A more recent Canadian study (Popova, Lange, Bekmuradov, Mihic, & Rehm, 2011) found for the year 2008-2009, youths with an FASD were 19 times more likely to be in prison compared to youths without an FASD. These studies may provide an illustration of what we may find in the U.S. corrections populations.

Some countries have tracked and measured FASD outcomes more effectively than the U.S. Freunscht and Feldman (2011) studied 60 young adult patients with FAS from Germany including their occupation, health, social functioning, and current living situations. They found that 80% grew up in adoptive or foster living situations, one in three patients lived with assistance of some kind, of those who lived without assistance were described as lacking "independence and are unable to care for themselves" (p. 34). Relatives indicated, "they do not

manage their money well and/or do not understand the value of money" (Freunscht & Feldman, 2011, p. 34). They found that 22% of patients lived with a long-term partnership, six patients had children, and four of the six patients with children cared for the children. Freunscht and Feldman (2011) also found two in three patients attended "regular schools" ("Special schools attended focused predominantly on learning disabilities," p. 34), 42% of patients changed schools during their education, 28% of patients completed vocational training whereas 42% of patients had no education or job training, 3% went on to University studies, and 24% had no occupation. Additionally, 33% of patients said yes to falling victim to criminal offense or abuse, and 12 of these patients reported sexual abuse or rape. ADHD was the most common diagnosis (18%), 13% also had a "mental disability," 15% were diagnosed with anxiety and/or depression, and 5% were diagnosed with Borderline Personality Disorder. When looking at psychiatric or psychotherapeutic treatment of the patients with FAS, 46% of patients had received outpatient treatment, and 30% had been in inpatient treatment. Relatives reported symptom improvement in 30%, but only four patients were described to have lasting symptom improvement (Freunscht & Feldmann, 2011). Sophr & Steinhausen (2008) evaluated individuals with PEA (22 FAS, 15 FAE) and followed these individuals over the course of 20 years. Only 29.5% lived independently and 70.5% lived in dependent or assistive living circumstances. They found 86.5% were unemployed or held inconsistent jobs (Sophr & Steinhausen, 2008). Easton, Burd, Sarnocinska-Hart, Rehm and Popova (2015) estimated that about 327 adults (ages 20-69) with an FASD died in Canada in 2011. Of these deaths, twice as many were men compared to women. Even though majority of deaths took place at ages 45 to 69, there was still a significant number of deaths prior to age 45 years old for these individuals with FASD (Easton et al., 2015).

FASD and Alcohol Use

Famy, Streissguth, & Unis (1998) evaluated adults who met the criteria for FAS and FAE and whose IQ was above 70. They found the most common disorder among the group was alcohol and drug dependence. Clark et al. (2004) found 22% of adults with an FASD, at one point, had an alcohol or drug problem. Individuals with an FASD were by definition prenatally exposed to alcohol, which brings about concerns or questions about whether that exposure places them at an increased likelihood for substance use including alcohol compared to individuals not prenatally exposed. Hannigan, Chiodo, Sokol, Janisse, and Delaney-Beck (2015) evaluated adults diagnosed with PAE and associations with smells of alcohol. They found that the higher level of PAE (i.e., ounces of alcohol per day and per drinking day and length of use during pregnancy; first conception, first prenatal visit, and across the pregnancy), the higher ratings for "pleasantness" and positive associations to the smell of alcohol (Hannigan et al., 2015). Currently, there is no causal research identifying the prevalence of substance use among those with an FASD (Popova, Lange, Burd, Urbanoski, & Rehm, 2013) however there have been a few studies that have looked more closely at the relationship between substance use and prenatal alcohol exposure. Two older studies, Streissguth, Barr, Kogan, and Bookstein (1997) and Baer, Sampson, Barr, Connor, and Streissguth (2003), found higher rates of alcohol use and abuse for adults diagnosed with FAS. This could have implications for possible exposure to their own children during pregnancy. Streissguth et al., (1997) found that 40% of women diagnosed with FAS consumed alcohol during pregnancy.

FASD and Corrections

Conry, Fast, and Loock (1997) evaluated youth with FAS and FAE within the justice system and identified that their biological mothers had a history of alcohol abuse as well as two-thirds of biological fathers. The study also found 73.1% of youth with FAS or FAE reported some form of abuse (physical, sexual, and/or emotional). In addition, Conry et al., (1997) found that 22% of mothers and 48% of fathers had a criminal history. Of the youth with FAS or FAE in the study, none lived with both parents and majority were living in foster or group home settings (Conry et al., 1997). When a youth ages out of the foster system and groups homes, structure is no longer provided, and they are considered an adult with full responsibilities. This leads to a lack of tracking and therefore minimal information until they interact with corrections.

There is currently no research from the United States showing prevalence of individuals diagnosed with FASDs within corrections system. Two studies have calculated estimated rates of FAS within corrections based upon current statistics. Burd et al. (2004) found within 39 states and a total of 3,080,904 inmates, only one person was formally diagnosed with FAS, which is not even comparable to the estimates of FAS within the United States among the general population. In terms of estimates of FAS and/or Alcohol Related Neurodevelopmental Disorder (ARND), Burd et al., (2004) estimated of the 3,080,904 inmates included in the data, the FASD diagnoses would range from 1,540 to 28,036 individuals (depending on the rates of occurrence used, 0.5, 2.8 or 9.1). The unfortunate finding related to diagnosis and tracking FAS is that less than 1% of expected cases of FASD were identified. Burd et al., (2004) determined in their study that the United States has, “high unmet needs to screen, identify, and treat offenders with FAS and ARND. Staff training needs are substantial.” (Burd et al., 2004, p. 169).

Popova et al. (2015) estimated the cost to correctional systems due to managing individuals with FAS to be $21.8 million in Canada in the year 2011-2012. They determined that men with FAS accounted for $19.4 million spent from the corrections budget, whereas women with FAS accounted for $2.4 million of correction budgets expenses. Popova et al. (2015) found in 2011-2012 that on average 3,870 individuals (average of 3,444 men & 426 women) have an FASD on any given day within the Canadian correctional system and the cost to the correctional system to manage these individuals totaled $356.2 million. Men with an FASD accounted for $317 million, and women with an FASD accounted for $39.2 million. Popova et al. (2015) stressed that the cost of corrections does not encompass the entire cost because it does not include other costs on the justice system such as law enforcement, court fees, probation, and costs incurred to possible victims (Popova et al., 2015).

Overall, there is a significant deficit in the research, understanding, and effective interventions in relation to individuals with FASDs in corrections. The current need is to have a better understanding of the prevalence of individuals within correction, the impact this has on the system, and an accurate understanding of the cognitive, memory, and behavioral patterns of those with one of the FASD diagnoses. In order to move toward this information, a system for screening for behaviors that are consistent with a diagnosis for FASD will help to alert professionals that a full neuropsychological evaluation is needed to establish an accurate diagnosis and understanding of the areas of the deficit in order to provide a program from which the individual can benefit. The aim of this study is to evaluate individuals in corrections for behavioral profiles, cognitive functioning, memory abilities and executive functioning abilities.

Hypotheses

Based upon research with children, adolescents and a few adults diagnosed with FASD, the following hypotheses are proposed for this U.S. adult population.

H1: the FAS BeST-Self-Report and the FAS BeST-Adult Other screeners will show positive correlations on similar items. The total scores of the FAS BeST: Self-Report and the FAS BeST- Adult Other will not be significantly different.

H2: Participants with possible prenatal exposure to alcohol will have higher total scores on the FAS BeST Self-Report and Adult Other than those with no indication of prenatal exposure to alcohol.

H3: Of the group who are currently in the court system, I hypothesize that those who score above 67 on the FAS BeST-Adult Other will exhibit memory deficits on the Wechsler Memory Scale, will have lower scores on the Full Scale IQ Index of the Wechsler Abbreviated Intelligence Scale, and will have invalid profiles on the PAI more frequently than those who score lower than 67.

H4: individuals who score above 67 on the FAS BeST-Adult Other will score higher on the antisocial features scale of the PAI than those who are lower than 67

H5: individuals who score above 67 on the FAS BeST-Adult Other will perform more poorly on all of the subtests of the DKEFS than those who are lower than 67.

Chapter 2

Methods

Participants

Inventory. Participants included two groups of adults. The first group (court) included 13 volunteers from the County's drug court treatment population (both men's and women's drug court program), as well as the County probation population. The court group included men (n = 10) and women (n = 3), ages ranging from 23 to 62 years old, (M = 34). All participants in the court group were charged with a crime. One participant did not complete the FAS BeST: Self Report and 1 participant did not complete the FAS BeST: Adult Other. Therefore, in each analysis of the FAS BeST: Self-Report and Adult Other there were 12 court participant responses analyzed.

In the court group FAS BeST: Adult Other 11 participants answered the question about mental health diagnosis, 5 participants reported no mental health diagnosis and 6 participants endorsed having a mental health diagnosis. In the court group FAS BeST: Self-Report, 12 participants answered the question about mental health diagnosis, 4 participants reported no mental health diagnosis and 8 participants endorsed having a mental health diagnosis.

Participants in the second group (online, n = 31) were recruited through social media using the snowball method. There were 14 women, 2 men, and 16 who declined to disclose gender. Only 16 disclosed their age which ranged from 21 to 77 years old (M = 36). It is unknown if any in the online group have a criminal history. In the online group, 20 participants

reported no mental health diagnosis and 11 participants endorsed having a mental health diagnosis.

Risk of prenatal exposure to alcohol was identified differently in the court group than the online group. In the court group, if participants had a total score at or above the cutoff score of 67 (using the cutoff from the FAS BeST; Colunga, Andrews, Seiders, & Mara, 2017) they were considered a high risk for PEA, those below the cutoff score were considered a low risk. For the online group, risk of exposure was determined based on the items about parental drinking habits. Participants who reported no history of drinking with either parent were determined as No Risk (n = 6). Participants who endorsed one or both parents drinking, but denied either parent becoming drunk or passing out in the home, were considered a Low Risk (n = 17). Participants who endorsed one or both parents becoming drunk in the home and/or passing out from alcohol in the home were determined to be a High risk (n = 7). These questions were not available for the court group.

Using the ratings from the "other", the court group consisted of 11 participants who fell in Low Risk and one in the High Risk. Using their self-ratings, the court group consisted of nine participants in the Low Risk category and three in the High Risk category. Participants who returned a completed FAS BeST Self-Report and FAS BeST- Adult Other were granted an incentive from their probation officer (e.g., gas gift card, toiletries). No incentive was offered to the online group.

Full assessment. These participants were volunteers recruited from a county drug court treatment population (both men's and women's drug court program) and a county probation population. The full assessment participants include men (n = 3) and women (n = 1), ages

ranging from 28 to 62 years old (M = 38). When identifying risk of prenatal exposure to alcohol based upon the total score, 2 participants fell at or above the cutoff of 67 for the FAS BeST: Self-Report, and 1 participant fell at or above the cutoff of 67 for the FAS BeST: Adult Other. None of the participants fell at or above the cutoff of 67 on both of the FAS BeST: Self-Report and Adult Other. Participants who completed the full assessment were granted one months waived probation fee.

Materials

The following instruments were administered to each participant from the court full assessment group.

Standardized intake interview. This is a set, standard list of questions to determine a number of aspects including; demographics; prior diagnoses; maternal information (if known); academic history (such as IEP, special education services, modified course/school work, etc.); prior accidents and/or concussions (to rule out Traumatic Brain Injury); occupational history; incarceration/judicial recidivism; and use of substances (See Appendix B).

Wechsler Abbreviated Scale of Intelligence, Second Edition (WASI-II; Wechsler, 2011). This measure is included to determine baseline intellectual ability, as well as identifying any possible deficits in intelligence. The WASI-II is linked with the WISC-IV and the WAIS-IV using item response theory and equal percentile equating methods to determine the subtests and comparable composite scores. Test-retest analysis showed reliability for child and adult samples with average stability coefficients for adults from .87 to .95 for composite scores (Wechsler, 2011). Internal validity was calculated using a split-half method (Wechsler, 2011). Wechsler (2011) also found convergent and discriminant validity between the WASI-II and a number of

assessments including: the WASI, the WISC-IV, the WAIS-IV, and the Kaufman Brief Intelligence Test, Second Edition (KBIT-2). In addition, construct validity was evident through factor analysis and mean comparisons (Wechsler, 2011).

Wechsler Memory Scale, Fourth Edition (WMS-IV; Wechsler, Holdnack, & Whipple, 2009). This assessment is used to measure an individual's memory capacity and ability and can be administered to individuals between the ages of 16 and 90 years old. The WMS-IV contains seven subtests including Logical Memory, Verbal Paired Associates, Visual Reproduction, Brief Cognitive Status Exam, Designs, Spatial Addition, and Symbol Span. The assessment contains five indices of measure, which consists of Auditory Memory, Visual Memory, Visual Working Memory, Immediate Memory, and Delayed Memory. Reliability studies of the WMS-IV indicated medium to high internal consistency amongst primary subtest scores, as well as high reliability amongst index scores. The WMS-IV "can indicate the degree to which the relationships among test items and test components conform to the construct on which the proposed test score interpretations are based" (American Educational Research Association, 1999, p. 13). "All intersubtest correlations are significant. The highest correlations were observed between the immediate and delayed conditions of the same subtest" (Wechsler et al., 2009, p. 57).

Delis-Kaplan Executive Functioning System (D-KEFS; Delis, Kaplan, & Kramer, 2001). The following subtests, Trail Making Test, Color-Word Interference Test, Sorting Test, and Twenty Questions Test are helpful in assessing executive functioning such a decision making, learning from experience, impulse control, and behavioral challenges. The DKEFS used a national standardization study in order to compare to the U.S. population demographically.

The Trail Making Test was evaluated for both internal consistency and test-retest reliability. The internal consistency values based on age ranged from 0.57 to 0.81 (Delis et al., 2001). The test-retest reliability showed improvement from the first performance to the second performance, however, correlation amongst total scores fell within the moderate range (Delis et al., 2001).

The Color-Word Interference Test was evaluated for both internal consistency and test-retest reliability. The internal consistency values based on age ranged from 0.62 to 0.86 (Delis et al., 2001). The test-retest reliability showed improvement from the first performance to the second performance and test-retest correlation values fell within the moderate to high range (Delis et al., 2001).

The Sorting Test was evaluated for both internal consistency and test-retest reliability. The internal consistency values based on age, for all three conditions, ranged from 0.55 to 0.84 (Delis et al., 2001). The test-retest reliability showed improvement from the first performance to the second performance, however, test-retest correlation values fell within the moderate range, for most of the card sorting measures (Delis et al., 2001).

The Twenty Questions Test was evaluated for both internal consistency and test-retest reliability. Analysis of the internal consistency showed that there is a level of interdependence amongst the four trials of this test (Delis et al., 2001). The internal consistency values based on age, ranged from 0.72 to 87 for initial abstraction and 0.10 to 0.53 for total weighted achievement (Delis et al., 2001). The test-retest reliability showed improvement from the first performance to the second performance. However, test-retest correlation values for the initial

abstraction fell within the moderate range, whereas the total weighted achievement score fell within the lower range (Delis et al., 2001).

Personality Assessment Inventory (PAI; Morey, 1991). The PAI is a measure used to identify personality traits and characteristics, as well as evaluating drug and alcohol use. Importantly, this assessment will help in identifying characteristics that may be related to higher risk level more common among those prenatally exposed. Internal Consistency Reliability of PAI indicated high values "with medium alphas for the full scales of .81, .86, and .82 for the normative, clinical and college samples" (Morey, 1991, p. 85). Validity was measured and supported by correlations found between the PAI and other measures including: the Neuroticism Extraversion, Openness Personality Inventory (NEO-PI), Minnesota Multiphasic Personality Inventory 2 (MMPI-2), and the Interpersonal Adjective Scales Revised (IAS-R) (Morey, 1991).

Materials for court and online groups.

Fetal Alcohol Syndrome Behavior Survey, Other Adult (FAS BeST; DeVries et al., 2001)**.** This is a checklist list of behaviors marked by someone besides the participant, and in this case may be a spouse/partner, probation officer, parent, or family member. The FAS BeST (DeVries et al., 2001) was found to be a reliable and valid screener for the behavioral profile of children with PEA (Robins, & Andrews, 2009). Criterion validity was established using the Achenbach Behavioral Checklists (2002). Reliability was evaluated using split-half analysis with persons diagnosed with FAS, pFAS, ADHD (all types) and dysgenesis of the corpus callosum. Using the original cutoff score of 75 (Porter & Andrews, 2004), the FAS BeST has a sensitivity of .736 with a specificity of .413. Using the score of 75 as the cutoff, controls were 100% accurately diagnosed. Using a second cutoff point of 67, the sensitivity was a.83 and specificity

.5 with 92% accurately of classification of controls (Colunga et al., 2017). The adult version is an adaption of the original FAS BeST and thus reliability and validity studies will be part of the current research (See Appendix C).

Fetal Alcohol Syndrome Self-Report Checklist (Adapted from the FAS BeST, DeVries et al., 2001**).** Since there is currently no self-report type assessment for adults with FAS, we have adapted a checklist based upon the original FAS BeST. The reliability and validity studies for the FAS BeST Adult will be part of the current research. The FAS BeST Self-Report items used online remained the same as the paper form (See Appendix D).

***Structured intake in survey form*.** In order to allow the online survey, Survey Monkey, to be more accessible and straight forward, the structured interview was modified. Many of the demographic questions were transformed into multiple choice questions rather than open-ended questions (See Appendix F).

Procedure

Once IRB approval was granted from the George Fox University Human Research Review Committee, permission to recruit from corrections was sought and granted from two judges of the county district. Participants for the court group were recruited from the drug court weekly treatment groups with permission of their group leader or from weekly probation orientation meetings with permission from the probation director. Each volunteer signed an informed consent (See Appendix E). Each participant received a packet with an FAS BeST: Adult Other and instructions to be completed by a close family or friend, as well as an FAS BeST: Self Report to be completed by the participant. The research administrators contacted the participants to schedule a date, time, and place for testing. Testing occurred in county buildings

in the county seat or on the University Campus. The sessions began with the structured intake interview. The assessments were administered in the following order: WASI-II, WMS-IV, PAI and the DKEFS. The participant was asked to complete FAS BeST: Self-Report. A feedback session was offered after the tests were scored. The participant was provided a short summary of the findings. Supervision was provided by a licensed clinical forensic psychologist and neuropsychologist.

Participants for the online group were recruited through social media using the snowball method. Each participant used the Survey Monkey link provided and agreed to the informed consent provided at the beginning of the survey. In the survey, each participant completed the FAS BeST: Self Report, followed by a questionnaire based on the questions provided in the Structured Intake Interview.

Chapter 3

Results

FAS BeST: Self-Report and FAS BeST: Adult Other Characteristics

The demographics of the FAS BeST inventories can be seen in Table 1 and Table 2.

Table 1

FAS BeST Range of Total Scores

	Range	Minimum	Maximum
Self-Report (Online)	51	26	76
Self-Report (Court)	45	30	75
Adult Other (Court)	63	11	74

Table 2

FAS BeST Total Demographics

	Mean	Median	Mode	Variance	Skewness	Kurtosis
Self-Report (Online)	48.94	48.00	25.00	205.53	0.33	-0.65
Self-Report (Court)	56.42	57.50	30.00	168.45	-0.65	0.23
Adult Other (Court)	40.50	40.00	14.00	492.27	0.001	-1.45

Factor analysis. Factor analyses were completed on the FAS BeST: Self-Report completed by the court group and the online group, and the FAS BeST; Adult Other. A varimax rotation was used with an Eigenvalue of 1 since there are no indications from research of how a

hierarchy or stepwise entry should be ordered. An item loading value of 0.500 and above was used for an item to be included in the factor. The court Self-Report and other-report analyses resulted in strong components accounting for 68% of the total variance. For the court Self-Report, components were observed and given labels to reflect the groupings: Component 1 Self-Control accounted for 27.6% of the variance; Component 2 Mental Flexibility accounted for 22.52% of the variance; and Component 3 Self-Monitoring accounted for 14.37% of the variance. See Table 3 for question groupings.

Table 3

Court Group FAS BeST: Self-Report, Factor Analysis

	Loadings
Component 1: Self-Control	
I can easily manipulate other people	0.855
People fool me into thinking that they are my friend	0.612
People tell me that I am unpredictable	0.542
I have done things that are risky or dangerous	0.91
I enjoy activities that others think are risky	0.806
I have been in trouble because of my spending habits	0.879
I follow the law*	0.871
I lie to others	0.828
I have borrowed family member's belongings without asking	0.533
When I am upset, I take it out on something or someone around me	0.53
When I get upset, I hurt people around me	0.708
I have continued a behavior even though I get in trouble for it	0.941
I get in trouble, even when I did nothing wrong	0.613
*When I get in trouble, I ignore it	0.755
I don't like to wait for things I want	0.697

Table 3 (*continued*)	
All my life I have done things my own way	0.556
I can get people to do things for me	0.799
Component 2: Mental Flexibility	
People tell me that I am unpredictable	0.556
I have done things because of pressure from other people	0.665
As a child I was known for breaking the rules more than following them	0.737
I function better with more structure (a daily schedule)	0.72
I lose track of time	0.546
I don't like change	0.647
I get blamed for things that are not my fault	0.818
I currently or in the past experience depression	0.603
I get angry easily	0.821
When I am upset, I take it out on something or someone around me	0.584
It is difficult for me to understand others' emotions	0.549
My moods can easily change without a reason	0.688
People try to make me feel guilty for no reason	0.543
I take care of myself first	0.525
I have trouble staying focused	0.614
I hold grudges	0.723
People tell me that I just don't get it	0.861
When others try to tell me I did something wrong, I get angry	0.783
Component 3: Self-Monitoring	
People fool me into thinking that they are my friend.	0.524
I lose track of time	0.742
I don't like change	0.589
I have been talked into making a large purchase by a very good salesperson (for example a TV or car)	0.754

Table 3 (*continued*)	
If I could get away with it, I would forget about showering or brushing my teeth	0.839
Even when I have a plan, I don't follow it	0.523
I have difficulty understanding what people want from me	0.607
I have trouble remembering rules	0.754
I have been diagnosed with a mental health disorder	0.76

Factor analysis for the FAS BeST: Adult Other completed by the court group participant "partner" was slightly different in its loadings from the Self-Report. The three components accounted for 68.7% of the variance. Component 1 accounted for 35.85% of the variance, Component 2 accounted for 19.5% of the variance, and Component 3 accounted for 12.75% of the variance. See Table 4.

Table 4

Court Group FAS BeST: Adult Other, Factor Analysis

	Loadings
Component 1	
Highly manipulative	0.734
Exhausted from disrupted sleep	0.728
Doesn't connect cause and effect (behavior and consequences)	0.674
Can't easily distinguish between friends and foe	0.706
Impulsive	0.67
Unpredictable	0.74
Appears desperate for stimulation or excitement	0.499
Excessively vulnerable to peer pressure (moral chameleon)	0.589
Needs more structure and supervision than peers	0.917
Overreacts to negatively to change	0.894

Table 4 (*continued*)	
Doesn't take responsibility for actions	0.639
Cannot consistently follow a plan of action	0.829
Doesn't follow the rules of society	0.845
Vulnerable to stress and overload	0.682
Lies/confabulates	0.563
Violent toward people	0.68
Unexplained mood swings	0.829
Behaviors doesn't improve/change with consistent consequences (makes the same mistakes)	0.667
Continues to deny guilt when confronted with solid evidence	0.584
Egocentric—acts on own needs first	0.568
Unable to stay focused on task	0.622
Detached attitude toward own behavior and its consequences	0.696
Takes path of least resistance (easiest)	0.683
Doesn't display remorse (not sorry for doing something wrong)	0.703
Appears undisciplined regardless of consistent discipline/consequences	0.615
Doesn't get the whole or big picture	0.752
Misunderstands what is expected	0.816
Becomes angry when confronted with wrong doing	0.578
Thinks he/she is the exception to every rule	0.703
Has trouble remembering rules from one day to another	0.548
Component 2	
More difficulty managing behavior in public than at home	-0.624
Impulsive	0.576
Excessively vulnerable to peer pressure (moral chameleon)	-0.531
Shows anti-social behavior (disregard for others)	0.65
Vulnerable to stress and overload	-0.625

Table 4 (*continued*)	
Lies/confabulates	0.585
Emotionally volatile; has outbursts	0.796
Violent toward people	0.607
Egocentric—acts on own needs first	0.738
Recognized by others as disabled	-0.707
Predatory—plans to harm others*	-0.57
Becomes angry when confronted with wrong doing	0.538
Has trouble remembering rules from one day to another	-0.754
Diagnosed with a mental health disorder	-0.731
Component 3	
Excessively vulnerable to peer pressure (moral chameleon)	0.583
Doesn't take care of hygiene needs	-0.547
Steals from family members	-0.547
Violent toward people	0.638
Continues to deny guilt when confronted with solid evidence	-0.564
Detached attitude toward own behavior and its consequences	0.564
Lives in the moment	0.602
Appears undisciplined regardless of consistent discipline/consequences	-0.626
Charismatic	0.643
I have thought about how I could harm others*	-0.7

The factor analysis for the online group FAS BeST: Self-Report did not account for as much of the variance as with the court participants. Only 28 of the 53 questions loaded on one of the first three components. Component 1 accounted for 22.4% of the variance, Component 2, 10.63% and Component 3 only 8.3% of the variance. See Table 5.

Table 5

Online Group FAS BeST: Self-Report, Factor Analysis

	Loadings
Component 1	
I get in trouble for my behaviors or things I do	0.551
People tell me that I do things without thinking	0.724
People tell me that I am unpredictable	0.532
I have done things that are risky or dangerous	0.602
I have done things because of peer pressure from other people	0.594
I lose track of time	0.628
I get blamed for things that are not my fault	0.739
I currently or in the past experience depression	0.675
I can become easily overwhelmed/overloaded	0.5
I get angry easily	0.772
It is difficult for me to understand others' emotions	0.535
I have continued a behavior even though I get in trouble for it	0.802
People try to make me feel guilty for no reason	0.551
When I get in trouble, I ignore it	0.582
All my life I have done things my own way	0.568
I have difficulty understanding what people want from me	0.619
When others try to tell me I did something wrong, I get angry	0.568
I can find a way around the rules	0.786
I have trouble remembering rules	0.644
Component 2	
People tell me that I am unpredictable	-0.629
I don't like change	0.508
Even when I have a plan, I don't follow it	-0.537
I like to live in the here and now not the past	-0.713

Table 4 (*continued*)	
Component 3	
I get in trouble for my behaviors or things I do	0.519
I can become easily overwhelmed/overloaded	-0.544
My mood swings can easily change without reason	-0.516
I can get people to do things for me	0.516

Reliability of FAS BeST Self-Report

A split-half reliability (top-bottom) method was used to evaluate the court FAS BeST: Self-Report. No significant difference was found between the halves (RMt (10) = 0.268, p = 0.79). See Table 6 for statistics.

Table 6

Court Group FAS BeST: Self Report, Split-half Reliability

	Mean	n	Standard Deviation	Standard Error of Measure
Questions 1-26	27.33	12	8.26	2.38
Questions 27-53	26.67	12	9.01	2.60

The online group FAS BeST: Self-Report was evaluated using the split-half reliability (top-bottom). A significant difference was found (RMt (28) = 5.825, p = 0.00). See Table 10 for results. An odd and even split-half reliability analysis was completed, and a significant difference was found (RMt (28) = 11.257, p =0.00). See Table 7.

Table 7

Online Group FAS BeST: Self Report, Split-half Reliability

	Mean	N	Standard Deviation	Standard Error of Measure
Questions 1-26	21.60	30	7.80	1.42
Questions 27-53	26.40	30	7.05	1.29
Total of Odd Questions	27.20	30	6.99	1.27
Total of Even Questions	20.80	30	7.51	1.37

For the court FAS BeST: Adult Other, a split-half method was used (top-bottom), and no significant difference was found (RMt (10) = 2.123, $p = 0.057$). See Table 8.

Table 8

Court Group FAS BeST: Adult Other, Split-half Reliability

	Mean	N	Standard Deviation	Standard Error of Measure
Questions 1-26	22.17	12	9.26	2.67
Questions 27-53	19.00	12	13.58	3.92

Hypothesis 1

For the first hypothesis, I proposed that the FAS BeST-Self-Report and the FAS BeST-Other items would show positive correlations and the total scores of the FAS BeST: Self-Report and the FAS BeST-Other would not be significantly different. The hypothesis was not fully supported by the results. There yielded several positive correlations, but the total scores were significantly different.

A Repeated Measure t-test was used to evaluate the similarity in responses between the total scores for the court FAS BeST: Self-Report and the FAS BeST: Adult Other. A significant difference was found (RMt (10) = 2.235, $p = 0.049$). The court FAS BeST: Self Report total score ($M = 56.36$) was significantly higher than the FAS BeST: Adult Other total score ($M = 39.18$).

The original FAS BeST (Colunga et al., 2017) established a cutoff of 67 that differentiated children to young adults who had an FASD from those who had other diagnoses (e.g., ADHD) and controls. The cutoff of 67 has good sensitivity and specificity. Using this cutoff for the current study, court sample showed the FAS BeST: Self Report to have three participants with total scores that were at or above the cutoff of 67 and nine total scores that ranged between 33 and 65. The FAS BeST: Adult Other for the same participants had one score at or above the cutoff of 67 and 10 total scores that ranged between 11 and 66.

The FAS BeST: Self-Report total scores for the court and online groups were compared. No significant difference was found (Indt (41) = 1.573, $p = 0.123$). See Table 9.

Table 9

FAS BeST: Self Report totals, Independent t-Test

	Mean	N	Standard Deviation	Standard Error of Measure
Court Group	56.42	12	12.98	3.75
Online Group	48.94	31	14.34	2.57

Hypothesis 2

Mental health diagnosis. Since the FAS BeST has been shown to distinguish those with an FASD from other diagnoses, total scores of those who indicated they had a mental health

diagnosis were compared to those who indicated they did not have a mental health diagnosis. An independent t-test yielded no significant difference (Indt (10) = 1.240, $p = 0.243$). See Table 10.

Table 10

Court Group FAS BeST: Self Report, Mental Health Diagnoses

	Mean	*n*	Standard Deviation	Standard Error of Measure
No Mental Health Diagnosis	50.00	4	15.47	7.74
Mental Health Diagnosis	59.63	8	11.26	3.98

Using the total scores from the court FAS BeST: Adult Other (MH diagnosis: 5; no diagnosis: 6) an independent t-test was completed. The results yielded no significant difference (Indt (9) = 1.220, $p = 0.253$). See Table 11.

Table 11

Court Group FAS BeST: Adult Other, Mental Health Diagnoses

	Mean	n	Standard Deviation	Standard Error of Measure
No Mental Health Diagnosis	29.40	5	22.62	10.11
Mental Health Diagnosis	44.17	6	17.60	7.18

The FAS BeST: Self-Report completed by the online group (20 reported no diagnosis, 10 endorsed a mental health diagnosis) total scores were analyzed. The results yielded no significant difference (Indt (28) = 0.853, $p = 0.401$). See Table 12.

Table 12

Online FAS BeST: Self Report, Mental Health Diagnoses

	Mean	*N*	Standard Deviation	Standard Error of Measure
No Mental Health Diagnosis	47.00	20	14.75	3.30
Mental Health Diagnosis	51.80	10	14.03	4.44

Risk of prenatal alcohol exposure. Since the FAS BeST (Robins & Andrews 2009) was shown to distinguish those with an FASD from those without an FASD, for the current study total scores for those who indicated they had a risk of prenatal alcohol exposure were compared to those who indicated they had a low or no risk of prenatal alcohol exposure.

The Court Group FAS BeST: Self-Report showed nine participants that scored below the cutoff of 67 on the FAS BeST: Self-Report, indicating low risk, and three participants who scored above the cutoff of 67 on the FAS BeST: Self-Report, indicating high risk. An independent *t*-test yielded a significant difference (Indt (10) = 2.9, $p = 0.015$). See Table 13.

Table 13

Court Group FAS BeST: Self Report, Risk of Exposure

	Mean	*N*	Standard Deviation	Standard Error of Measure
Low Risk	51.56	9	11.01	3.67
High Risk	71.00	3	4.00	2.31

Using the FAS BeST: Adult Other for the Court Group, I was unable to analyze the data due to the small number of individuals who fell within the high risk range. The Court Group FAS

BeST: Adult Other showed one individual who fell within the high risk range, and 11 individuals who fell within the low risk range using the FAS BeST cutoff of 67.

The online group FAS BeST: Self-Report showed, based upon parental drinking patterns questions, that 6 individuals fell within the no risk range, 17 fell within the low risk range, and 7 fell within the high risk range. A one-way ANOVA, yielded no significant difference ($F(2,28) = 0.333$, $p = 0.72$). See Table 14.

Table 14

Online Group FAS BeST: Self Report, Risk of Exposure

	Mean	*N*	Standard Deviation	Standard Error of Measure
No Risk	52.86	6	16.39	6.19
Low Risk	48.06	17	13.50	3.27
High Risk	47.14	7	15.78	5.97

Small *n* Pilot Study

Hypotheses 3, 4 and 5 were based on the expectation that the *n* for the group from the courts and probation who completed all the testing would be large enough to analyze. I hypothesized (H3) that those who score above 67 on the FAS BeST-Adult Other would show memory deficits on the Wechsler Memory Scale, have lower scores on the FSIQ Index (WASI-II), and have invalid profiles on the PAI more frequently than those who scored lower than 67 (See Figure 1, 2, 3, and 8 at the end of the chapter). I hypothesized (H4) that individuals who score above 67 on the FAS BeST-Adult Other would score higher on the antisocial features scale of the PAI than those who were lower than 67. I hypothesized (H5) that individuals who score above 67 on the FAS BeST-Adult Other would perform more poorly on all of the subtests of the

DKEFS than those who were lower than 67 (See Figure 1, 4, 5, 6, and 7 at the end of the chapter).

Unfortunately, this study was unable to obtain a representative sample of participants to complete the testing. Only four participants completed the full testing protocols. Due to the size of sample, I was unable to analyze and interpret the data in a way that was representative of the population being studied. The following figures demonstrate the findings for the sample within the correction systems in terms of cognitive functioning, memory, executive functioning, and behavior. See Figures 1-8.

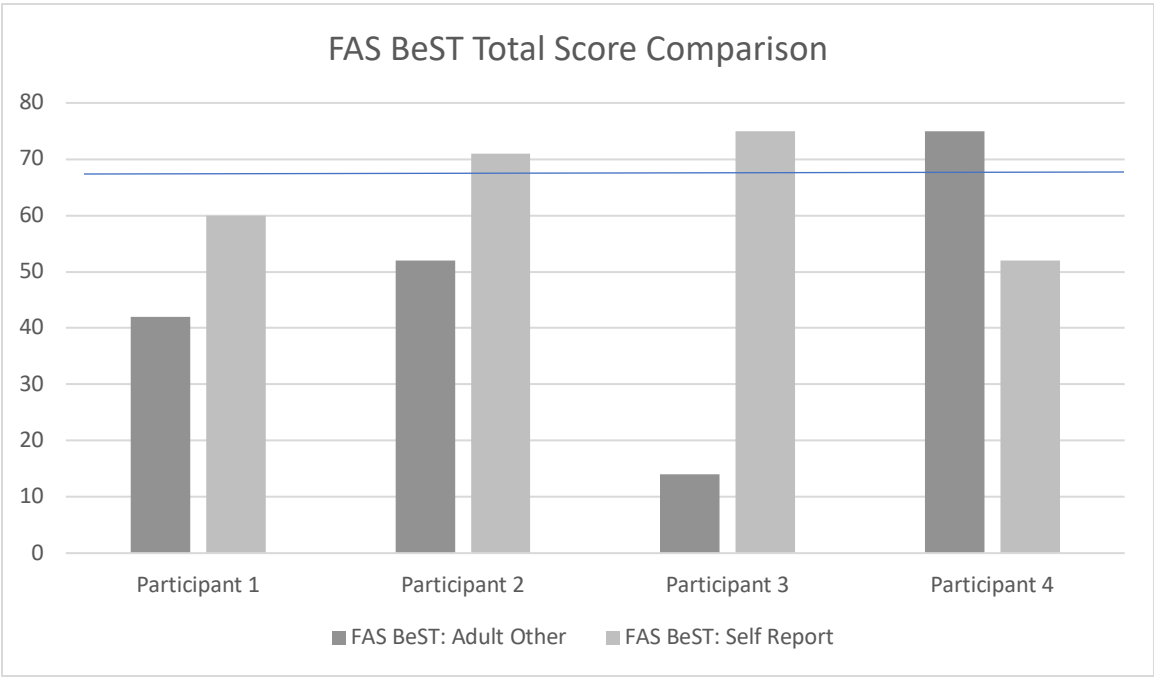

Figure 1. FAS BeST total score comparison.

A bar graph representing the total score of each participant on both the FAS BeST: Adult Other, completed by someone close to the participant, and the FAS BeST: Self-Report completed by the court participant. The blue line on the graph represents the cutoff of 67, with scores at or above 67 indicating risk of FASD and scores below 67 indicating low risk of FASD.

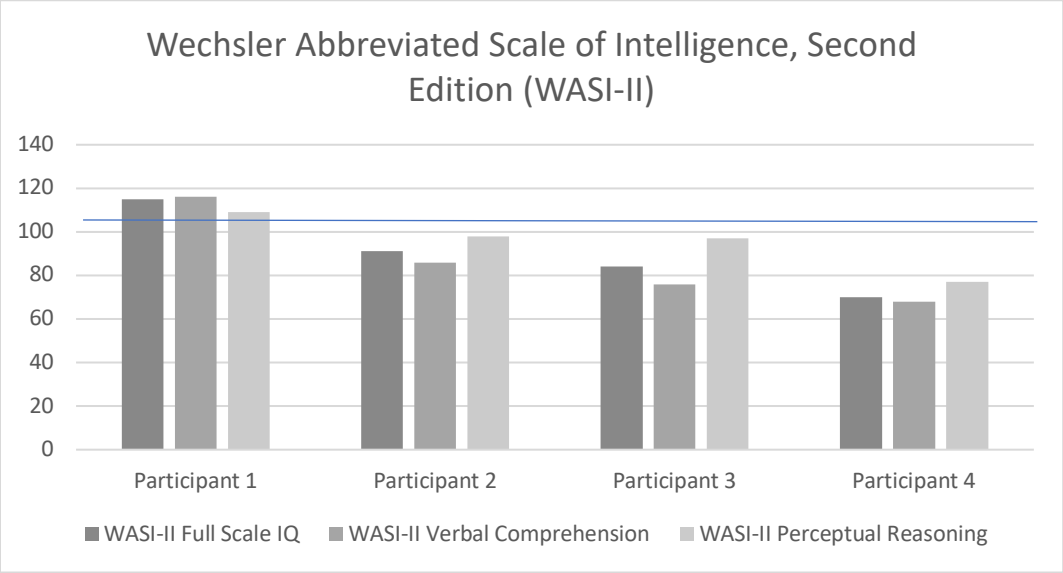

Figure 2. WASI-II participant comparison.
A bar graph to represent each participant's performance on the WAIS-II including full scale IQ and two subcategories including Verbal Comprehension and Perceptual Reasoning. The blue line indicates average normative score of 100 with a SD of +/- 10 points.

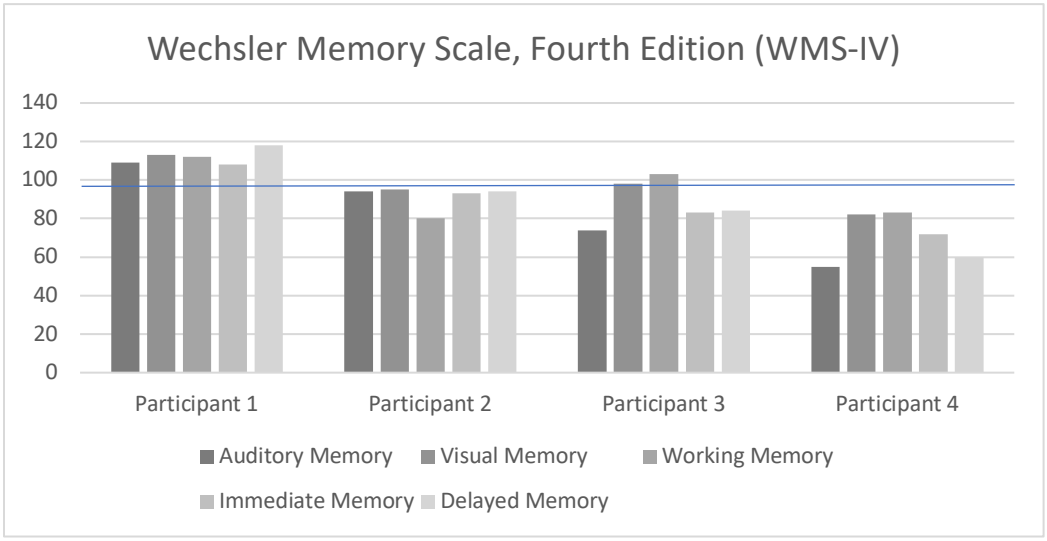

Figure 3. WMS-IV participant comparison.
A bar graph to represent each participant's performance on the WMS-IV including five sub-categories of Auditory Memory, Visual Memory, Working Memory, Immediate Memory, and Delayed Memory. The blue line indicates average normative score of 100 with a SD of +/- 10 points.

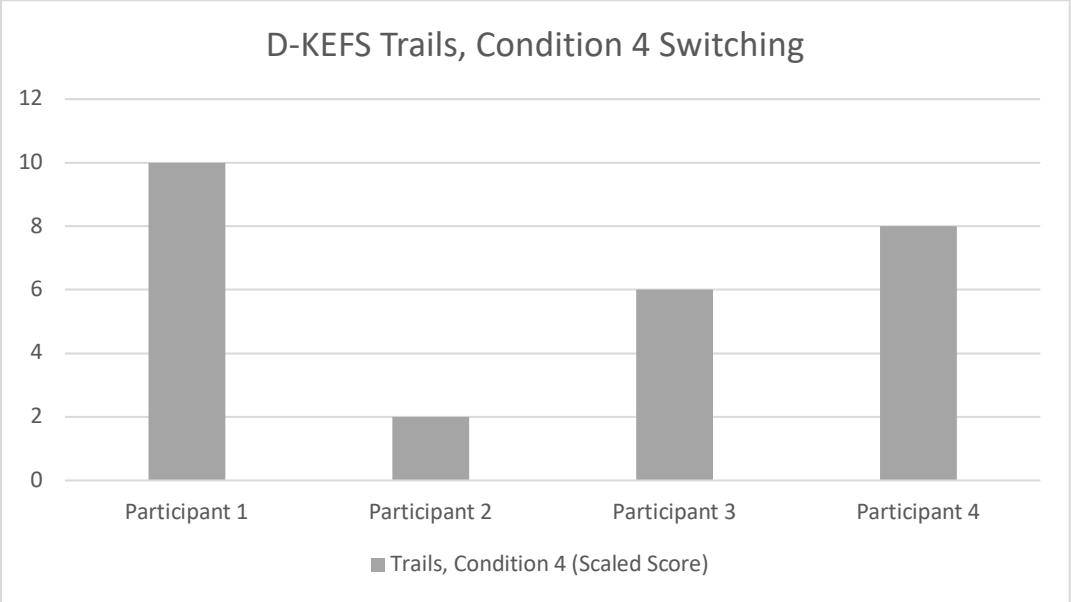

Figure 4. D-KEFS trails participant comparison.

A bar graph to represent each participant's performance on the DKEFS Trails Condition 4 Switching. This test evaluates one's ability to quickly switch between numbers and letters in numerical and alphabetical order.

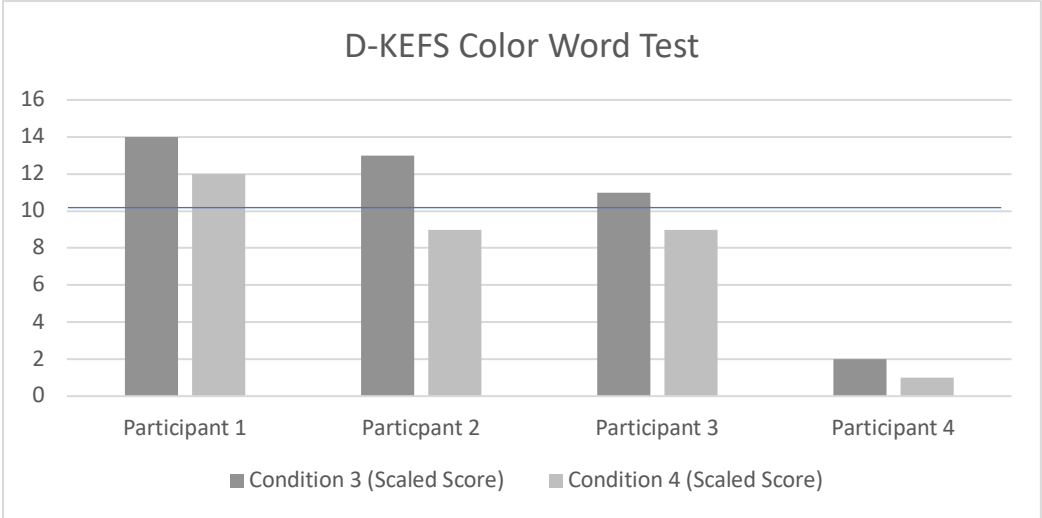

Figure 5. D-KEFS color word test participant comparison.

A bar graph to represent each participant's performance on the DKEFS Color Word Test on Conditions 3 and 4. The blue line indicates average normative score.

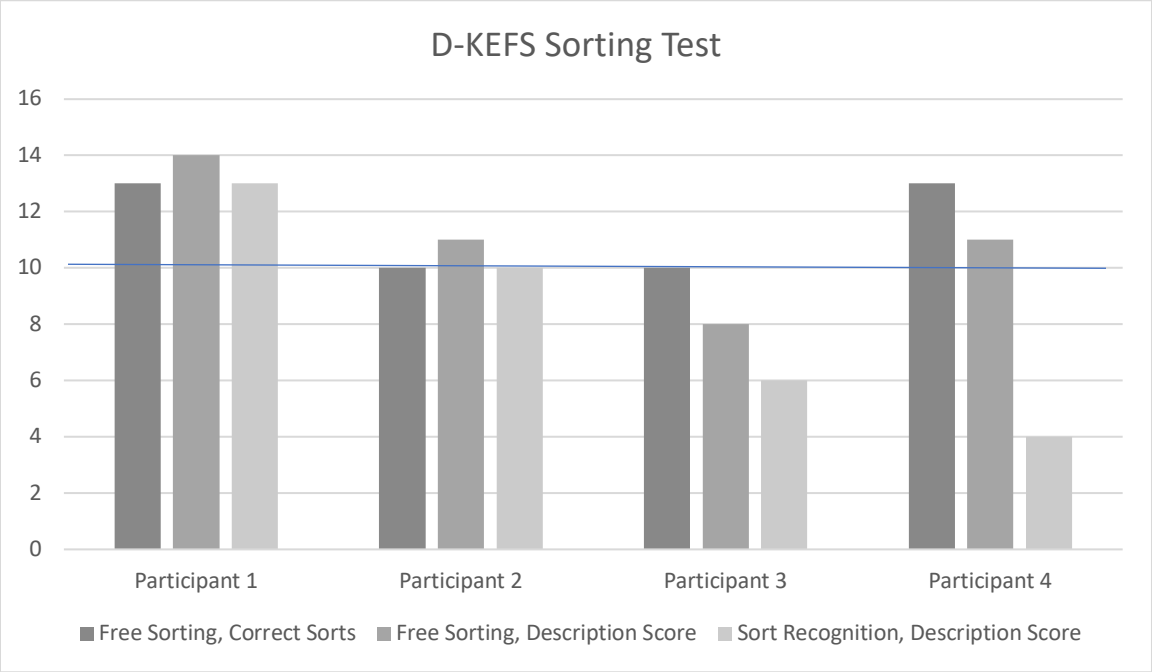

Figure 6. DKEFS sorting test participant comparison.
A bar graph to represent each participant's performance on the D-KEFS Sorting Test across multiple domains including Free Sorting correct sorts and description score, and Sort Recognition description score. The blue line indicates the average normative score.

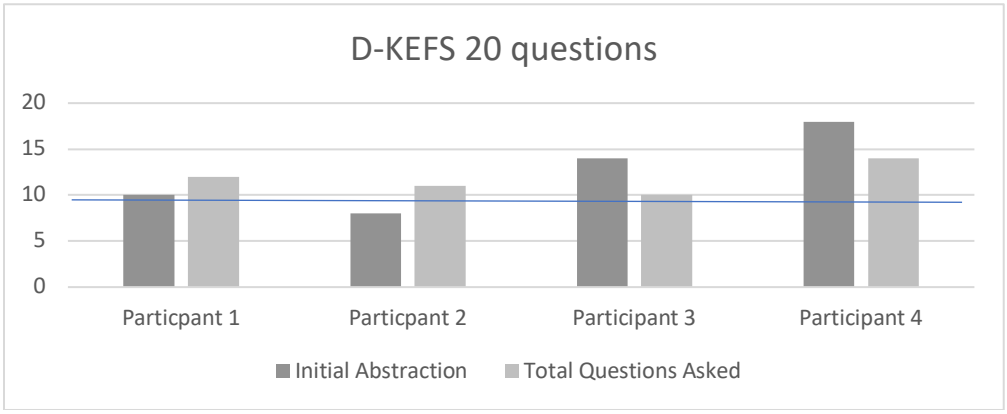

Figure 7. D-KEFS 20 questions test participant comparison.
A bar graph to represent each participant's performance on the DKEFS 20 Questions Test including both initial abstraction score and total questions asked. The Blue line indicates the average normative score.

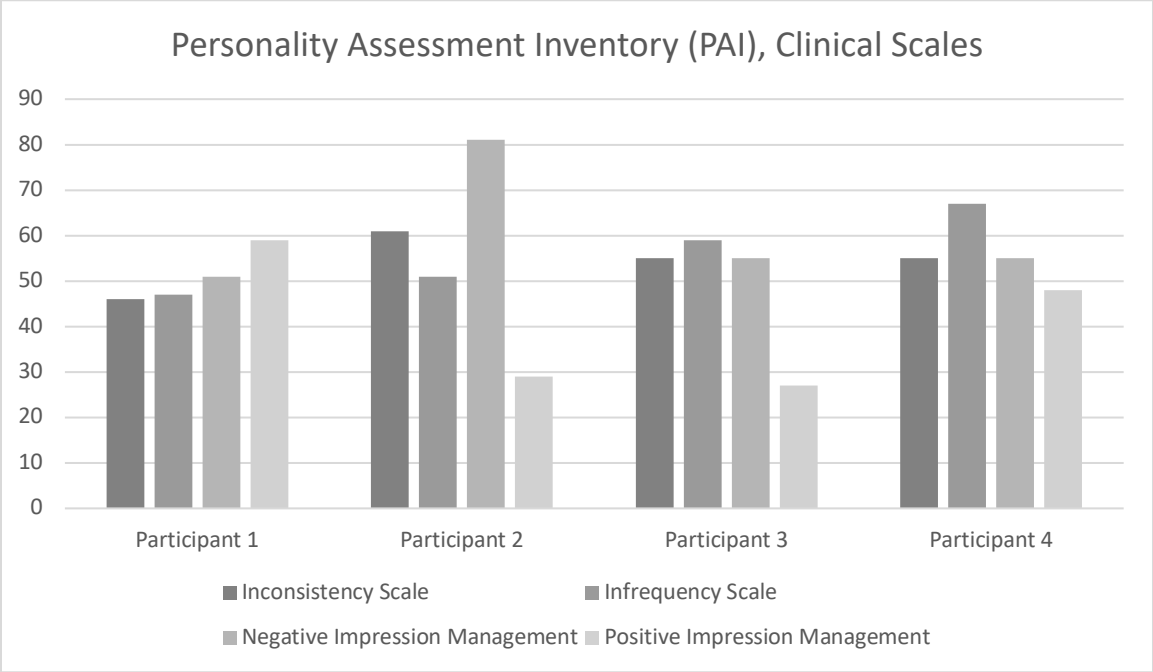

Figure 8. PAI validity scales participant comparison.

A bar graph to represent each participant's response pattern on the PAI Clinical Scales including the Inconsistency Scale, the Infrequency Scale, the Negative Impression Management scale, and the Positive Impression Management scale.

Chapter 4

Discussion

FAS BeST: Self-Report

Most of this study's results focused in on the FAS BeST measure, in both the Self-Report and Adult Other forms. Amongst the court group, reliability was identified with the Self-Report and Adult Other. Unfortunately, the online group Self-Report did not show reliability which is likely due to the high variability in response patterns. Further research to increase the sample size is needed to further support the reliability of the FAS BeST: Self Report.

Validity of the FAS–BeST: Self-Report was not possible because of the lack of information confirming prenatal exposure to alcohol. Attempts were made to use the questionnaire and developmental data to hypothesize who might have been prenatally exposure. The data did not provide enough evidence of exposure to hypothesize a diagnosis of FAS.

Being able to screen for a behavior profile consistent with a diagnosis of one of the FASDs is helpful in treatment planning. With children this is accomplished by having the parent or guardian complete the rating form (Robin & Andrews, 2011). One of the major goals of the current study was to evaluate the viability of utilizing a Self-Report and an adult other for screening of an FAS behavioral profile. The Self-Report was compared to the adult other version for the court group and found reliability in the comparison. The similarity (no significant difference in total scores) shows promise that the FAS BeST: Self-Report may be identifying the behavioral profile of the adult in the same manner as the person who observes their behavior and rating it using the FAS BeST: Adult Other. This indicates that with further data collection and

research, the FAS BeST may likely become a valid and reliable screener of FASD behavioral profile. The implications of this finding are significant. Currently the original FAS BeST must be completed by guardian, significant other, or close friend. If the FAS BeST: Self-Report were determined to be both valid and reliable, then a screening of FASD could be completed with the test participant alone, without needing other individual responses and potentially requiring more time and effort in order to complete the screening process. This could allow screening FASD to be more easily conducted and more readily available.

Unfortunately, similarity was not found between the FAS BeST: Self-Report completed by the court group to the FAS BeST: Self-Report completed by the online group. There are many possible reasons for discrepancy. There were several differentiating features between the Self-Report completed by the online group and the Self-Report completed by the court group including the high variability in response patterns in the online group responses, as well as possible outliers including the maximum total score. The online group exhibits many unique factors that may have affected being unable to determine reliability in the Self-Report such as pressure to quickly finish the survey, higher education level identified, and differences in the format and presentation of the questions. It is also important to consider the possibility that the way in which responses were recorded (i.e., online survey versus paper screener) may have affected the way in which people responded to the questions. Similarly, the type of individuals who completed the screener online may be extremely different from individuals who volunteered to complete a screener in drug court treatment groups or probation groups.

Factor Analysis

The factor analysis of the three groups posed interesting findings. The three strongest components in the FAS BeST: Self-Report completed by the court group included groupings of items I labeled: Self-Control, Mental Flexibility, and Self-Monitoring. If these factors remain as more data are gathered, it is possible that the FAS BeST: Self-Report will provide subscales that further inform clinicians, court personnel, and corrections personnel about the area of consistency and/or strength and areas of weakness of the inmate, group member or probationer. This can further information treatment plans and sentencing programs.

The factor analysis for the online group FAS BeST: Self-Report, was not as strong. The participants have much more variability in their response leading to much less similarity. This may suggest that there are behavioral similarities with people who are in the court system due to illegal behavior that is not found in a general population. This is an area for further research.

As we are able to understand more clearly what the screener is measuring, then we can begin to form and recognize a behavioral profile specific to individuals within the court system and possibly those with prenatal alcohol exposure. This could help in gaining greater understanding about the difficulties that individuals prenatally exposed to alcohol may experience and inform possible future interventions to address those challenges.

Differences in the factor analysis for the online group FAS BeST: Self-Report were very apparent. The greatest difference being that half of the questions did not load on the first three components. There may be a number of possible reasons that the online group exhibited fewer loadings. The online group showed higher education levels which may have influenced the responses. The online survey may have been more varied given that the structure of answering

was a different format. People may have responded in a unique way with the online survey versus an in-person paper and pencil screener. The participants in the online study may have responded in one manner because they were given little information on what the study was evaluating, whereas the court group was provided paperwork and an oral presentation about the general concepts of the study and screeners. The expectations, or lack of expectations, of what the study was examining may have caused participants to answer in a way that showed poor reporting or inconsistent manner.

Prenatal Alcohol Exposure Challenges

There were several limitations in this study in evaluating the screener's ability to screen accurately and effectively for FASD or prenatal alcohol exposure. First, no one participant was clearly diagnosed with FASD in the sample. The Court Group FAS BeST: Self-Report indicated significant differences between total scores with high risk of prenatal alcohol exposure, compared to those with low risk of prenatal alcohol exposure. When looking at risk of prenatal alcohol exposure, the analysis presented challenges and no differences were found in total scores of the online survey FAS BeST: Self-Report and the court group FAS BeST: Adult Other was unable to be analyzed due to only one participant falling within the high risk of prenatal alcohol exposure range. This could be problematic because I was not able to establish validity of the FAS BeST without participants with an FAS diagnosis. However, it could be that the screener is effective in identifying FASD versus risk of prenatal alcohol exposure because risk does not necessarily equal diagnosis. More research is needed to gain greater understanding about the screener's ability to effectively screen for an FASD behavioral profile, and the applicability of the information amongst a wide demographic.

Complete Testing with Court Participants

Due to small number of participants who completed the full protocol, I am unable to make any interpretations based upon the data collected as it does not adequately represent court populations. However, with the data collected, patterns may be detected that will inform directions of future research in understanding the cognitive, memory and executive functioning of persons within corrections.

Of the four participants, only one participant (Participant 1) total scores on both versions of the FAS BeST fell below the cutoff, indicating his risk of prenatal alcohol exposure is low. Two participants (Participants 2 and 3) fell at or above the cutoff of 67 for the Self-Report, and one participant (Participant 4) fell above the cut off score of 67 for the adult other version.

In looking at intelligence and memory testing (WASI-II and WMS-IV), those who scored at or above the cutoff of 67 on either the FAS BeST: Self-Report or Adult Other, showed lower scores overall on intelligence and memory testing compared to the individual who scored below the cutoff of both versions of the FAS BeST. If these findings could be replicated in a larger scale study, it would support the hypothesis that those who score at or above the cutoff on the FAS BeST, indicating risk of prenatal alcohol exposure, would show lower scores on intelligence and memory testing. This would be consistent with research on negative effects of prenatal exposure to alcohol on intelligence and memory (Mattson et al., 2011).

When evaluating executive functioning, using four subtests of the DKEFS, the results were not as expected. I found that the cut off score of 67 on the FAS BeST: Self-Report or Adult Other had no obvious relationship on participant's scores. This is not consistent with the hypothesis that individuals whose FAS BeST total scores fell at or above the cutoff of 67 would

perform poorly on all four of the DKEFS subtests compared to individuals who score below the cutoff. However, on individual subtest performance, I was able to identify some patterns in the small amount of data collected. On the four DKEFS subtests, the participant who fell at or above the cutoff 67 on the FAS BeST: Adult Other and exhibited the lowest overall IQ received the lowest score overall on the Color-Word Test, but the highest score on the 20 Questions Test. This is interesting and may suggest a unique ability for deductive reasoning in this person. Even with lower overall cognitive functioning people can, at times, have unique verbal skills that may even mask a disability.

In evaluating the scores of the PAI for the four participants, I was unable to support the hypothesis that individuals who fell at or above the cutoff score of 67 on the FAS BeST would have invalid profiles on the PAI more frequently than those who scored below the cutoff. Even though some scores on PAI validity scales came close to be invalid, no participant's responses on the PAI were identified as invalid based upon the validity scale scores. In reviewing each individual validity scale for possible patterns, no patterns or trends emerged based upon the participant's total score on the FAS BeST when compared to each validity scale score.

Another hypothesis in this study was that individuals who scored at or above the cutoff of 67 on the FAS BeST would have higher scores on the PAI antisocial scale compared to individuals who scored below the cutoff. This hypothesis was not fully supported as some of the participants who scored at or above the cutoff score of 67 on either version of the FAS BeST had lower scores on the PAI antisocial scale. However, those individuals who score at or above the cutoff of 67 on the FAS BeST: Self-Report showed higher scores on the PAI antisocial scale.

Limitations

This study exhibited many limitations due largely to small number of participants who were able to complete the full set of neuropsychological testing, thus it is not a representative sample, and no significant conclusions can be drawn. The reasons for the small n vary. During this study many individuals volunteered to participate and signed a consent form to be a part of the study, however, when called to schedule a time to complete the testing, many individuals did not answer the phone or return phone messages. Of the participants who answered the phone or called back, many would schedule appointments and then not show to the appointment or cancel. This challenge may be due to the difficulty people on probation and/or those trying to stay clean and sober have in just managing daily life.

Another limitation in this study was that participants were not asked to report what specific mental health diagnoses they have, but were asked instead to endorse whether they have a mental health diagnosis. Participants were also not asked to report whether they have been diagnosed with FASD which means comparisons could not be made between those diagnosed with FASD and those not diagnosed with FASD.

In addition, one of the more significant limitations in this study was the fact that it was unknown if any of the volunteers who participated in the study had been diagnosed with an FASD and thus comparisons could not be made specifically between those with diagnosis of a FASD and a control group.

A further limitation included the use of an online survey. A specific group in the study completed all of their material in an online format, whereas the participants in the court group completed their materials in paper form. In the online format, the structured interview questions

were formatted more for ease of answering such as transforming many of the questions from an open-ended question to a multiple choice answer. Making changes to questions for the online version may have made it easier for participants to answer yet provided less information overall. The online survey had missing responses to certain questions because participants may have quit after getting so far into the survey, or may have simply skipped questions intentionally.

Implications

Based upon our analysis of the similarity, particularly between the FAS BeST: Self Report and Adult Other, results indicated no significant difference. This indicates that there may be promise of the Self-Report becoming a reliable screener of FASD. If reliability is able remain among larger sample sizes with a wider range of demographics, there is potential for the self-form of the FAS BeST becoming a well-supported tool to screen for FASD that can be completed by the participant alone. Due to the difficulties at times in finding and retrieving responses from a second party that knows the participant, as the FAS BeST original is structured to do, the Self-Report would only require the participant. This could cut down time on screening for FASD, and potentially increase the amount of individuals screened across the board. This may be a huge implication because the rate of individuals formally diagnosed with FASD in corrections is low compared to prevalence rates, and increasing the ease and accessibility of screening for FASD with a Self-Report may potentially increase the number of individuals screened and improve the ability to provide appropriate treatment and support for those with FASD who are in corrections.

Having a mental health diagnosis did not have an effect on the total score of the FAS BeST. This was expected because previous studies have shown that the FAS BeST distinguishes

between FASD and other mental health diagnoses. Therefore, we would expect that the online group would be different from any group of individuals prenatally exposed to alcohol.

With the lack of formal diagnoses of an FASD, and not expecting many based on Burd et al (2004) research, the developmental question responses and total score cutoffs were used to estimate the possibility of PEA. The results indicated that having risk of prenatal alcohol exposure did not effect on the total score of the FAS BeST. This could be problematic as the screener's goal is to accurately screen for FASD. However, similar to differentiating based on mental health diagnosis, the screener may effectively screen for FASD when compared to those simply at risk of prenatal alcohol exposure since risk does not determine diagnosis.

Continuing to gather data on the FAS BeST screener is the key to having more knowledge and understanding about whether the screener is effectively and reliably identifying FASD behavioral profile in adults. In order to truly identify a cognitive behavioral pattern specific to FASD, more participant data in order to form a more accurate understanding of how FASD presents differently both cognitively and behaviorally compared to other diagnoses such as ADHD, Conduct Disorder, and Antisocial Personality Disorder. With more data, the potential of the FAS BeST screener could indicate that the behaviors screened for in the FAS BeST are related to a behavioral profile specific to prenatal alcohol exposure.

Increasing the number of participants completing the neuropsychological testing process, increases the possibility of further understanding FASD in adults using a cognitive behavioral model. First, it could indicate deficits in specific test points that are unique to adults prenatally exposed to alcohol. Equally, it could provide understanding of specific deficit ranges on testing data points that are more exclusive to FASD. Also, by using the cutoff of the FAS BeST to

determine risk, we may find a wider net of individuals prenatally exposed to alcohol, and therefore create a more inclusive cognitive behavioral profile that represents a spectrum of FASD from mild to more severe.

Future Directions

This study has shown promise for future directions in research. The design, given a representative size of participants, could help in informing the field with a cognitive behavioral profile specific to FASD diagnoses. It could help in defining differentiations from neuro-psychological testing that could provide insight into how those with FASD may perform differently compared to those without FASD.

With a larger sample size, there is promise that the FAS BeST: Self-Report could become an established evidence-based screener with sufficient validity and reliability. The idea would be to have a larger scale study in which participants complete the FAS BeST: Self Report along with a close family member, significant other, or close friend completing the FAS BeST: Adult Other in order to compare results. If reliability remains consistent with a larger sample that is more representative of the court population, then the FAS BeST: Self-Report could become a reliable screener of FASD diagnoses in adults.

Another helpful direction for future research to continue is to have participants identify whether or not they know they have been prenatally exposed to alcohol and/or have been diagnosed with a FASD. With a larger sample size of participants diagnosed with a FASD or with known prenatal alcohol exposure, then research could really help in evaluating if the FAS BeST: Self-Report and the FAS BeST: Adult Other are specifically good at identifying behavioral profiles consistent in those with an FASD diagnosis. This may also help in identifying

what specific behavioral components are specific to adults diagnosed with an FASD versus other diagnoses. Knowing who has FASD helps in forming an effective and accurate cognitive behavioral profile based on the testing identification markers (i.e., deficits or identifying styles of response).

Establishing and identifying what mental health diagnoses participants have could help in evaluating whether the FAS BeST Self-Report is consistently identifying and FASD behavioral profile when compared to other diagnosis. Research has shown that the original FAS BeST was able to identify FASD effectively when compared to other diagnoses). However it would be helpful to know if this research is applicable to an adult population and whether the FAS BeST Self-Report is also just as effective. In regards to the full protocol of testing, it would be beneficial to see how those with a FASD perform across those measures when compared to other mental health diagnoses. This would help in informing a cognitive profile for adults in corrections with an FASD diagnoses, and also help identifying how FASD presents differently even when compared to other mental health diagnoses.

Additional data are needed in order to verify that the components identified in the factor analysis will consistently remain with a larger sample of individuals responding. Understanding a person's behavior ratings on the three subscales can further assist in understand specific areas that are strengths and areas that are challenges. With this information, a more focus type of probation and treatment can be designed. This could possibly lead to improved understanding of reasons people in drug court struggle and people in the probation system continue to make choices that cause them to repeat offenses.

FASD is a life-long condition that is avoidable. Treating and caring for individuals with an FASD is expensive and not well understood. The more we understand about those who are adults with an FASD, the better prepared we will be to assist them in living a safe and more satisfying life.

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Appendix A

Criteria for FAS Diagnosis: Canada

The criteria Canada uses for diagnosing FAS, once other diagnoses have been excluded: Evidence of prenatal or postnatal growth impairment, as in at least one of the following: a) Birth weight or birth length at or below the 10th percentile for gestational age. b) Height or weight at or below the 10th percentile for age. c) Disproportionately low weight-to-height ratio (= 10th percentile). 3. Simultaneous presentation of all three of the following facial anomalies at any age: a) Short palpebral fissure length (two or more SD below the mean). b) Smooth or flattened philtrum (rank four or five on the lip-philtrum guide). c) Thin upper lip (rank four or five on the lip-philtrum guide). 4. Evidence of impairment in three or more of the following central nervous system domains: hard and soft neurologic signs; brain structure; cognition; communication; academic achievement; memory; executive functioning and abstract reasoning; attention deficit/hyperactivity; adaptive behaviour, social skills, social communication. 5. Confirmed (or unconfirmed) maternal alcohol exposure" (Chudley 2005, S12).

For the diagnosis of partial fetal alcohol syndrome, the criteria included facial abnormalities (detailed above), impairment to the central nervous system (detailed above) and specified "confirmed maternal alcohol exposure" (Chudley et al., 2005, S12). Diagnostic criteria for alcohol-related neurodevelopmental disorder only includes impairment to the central nervous system (detailed above) and specified "confirmed maternal alcohol exposure" (Chudley et al., 2005, S12).

Appendix B

Structured Intake Interview
Drug Court Study

Code Number:

Evaluator: _____

Date of Intake: _____

I have a series of questions that I would like to ask you. This is for the research and will not be disclosed to anyone without your permission. It would be very helpful if you can answer all of the questions as completely as possible. If a question makes you feel too comfortable, you can tell me you would like to skip that one. Do you have any questions before we start this part of the evaluation?

Volunteer Information:

General

Age: _____ Date of Birth: _____
(MM/DD/YYYY)

Gender: _____

Handedness: Right Left Ambidextrous

Ethnicity: _____

First Language: _____

Other languages spoken/understood: _____

Education

Did you attend:
Preschool YES No
Kindergarten Yes No what age?_____

What was your experience of 1st through 5th grade like?

Did you repeat a grade? Yes No
If yes, which grade? _____

Were you on an Individualize Education Plan? Yes No

What was your experience like in Middle School?

What type of grades did you earn? _____

Favorite subject in middle school? _____

Most difficult subject in middle school? _____

Did you graduate from high school? Yes No

If yes, what year _____ GPA: _____
If no, how far did you go in high school: _____
What was the reason you stopped attending?

Did you play sports during school? Yes No
If yes, which sport?

If yes, when did you play?

Did you attend college? Yes No

Is yes, where? _____

What was your major or focus/program? _____

Did you earn a degree? Yes No Type: _____

Did you have friends in:

elementary school	Yes	No	Close?	Yes	No
middle school	Yes	No	Close?	Yes	No
high school	Yes	No	Close?	Yes	No

Do you currently have friends? Yes No
What are they like?

Employment:

What was your first job? _____

How old were you when you started the job? _____

What was your most recent employment? _____

How long have/did you work there? _____

What was your longest held job? _____

What was the job you held the shortest length of time? _____

Medical:

Have you been hospitalized Yes No
If yes, when and for what reasons?

Do you experience/have any of the following?

headaches more than once/week?	Yes	No	_____
seizures	Yes	No	_____
tremors	Yes	No	_____
weight loss/gain	Yes	No	_____
changes in your hearing	Yes	No	_____
difficulty keeping your balance	Yes	No	_____
trouble understanding what others say	Yes	No	_____
Have ringing in your ears	Yes	No	_____
back pain	Yes	No	_____
change in your ability to smell	Yes	No	_____

changes in your ability to see Yes No _____

changes in your memory Yes No _____

trouble getting others to understand what your are saying Yes No _____

get lost in familiar places Yes No _____

have trouble sleeping Yes No _____

depression Yes No _____

anxiety Yes No _____

Other issues _____

Have you ever had a head injury? Yes No

If yes, how old were you? _____

What caused the head injury?

Did you go to the emergency room/hospital/urgent care for treatment? Yes No

Alcohol & Drugs

How old were you when you first drank alcohol? _____

Were you alone or with a group of people? _____

How old were you when you first passed out from alcohol? _____

Did your biological father consume alcohol? _____

become drunk more than once/week? YES No

pass out at home from drinking Yes No

Did your biological mother consume alcohol? _____

become drunk more than once/week? YES No

pass out at home from drinking Yes No

drink when she was pregnant? YES No

How old were you when you first starting using drugs? _____

What was the first drug used? _____
What others drugs have you used?

How often did you use prior to your most recent arrest? daily, 4 times/week, 2 times/week _____

What has been your drug of choice most recently? _____

Did your biological father use drugs? _____
more than once/week? YES No
at home Yes No

Did your biological mother use drugs? _____
more than once/week? YES No
at home Yes No
when she was pregnant? YES No

Do you use tobacco products? Yes No

If yes, which ones? _____

How old were you when you started? _____

What is the amount and frequency of your current use?

Did your biological father use tobacco? _____
more than once/week? YES No
at home Yes No

Did your biological mother use tobacco? _____
more than once/week? YES No
at home Yes No
when she was pregnant? YES No

What types of treatment programs have you been in?

What was the most helpful and why?

Family:

Marital Status: Single Married/cohabitating Separated Divorced Widowed

Do you have children? Yes No
If yes, how many: _____

Gender and ages:

_____

_____

_____

With whom do the children currently live: _____

Relationship to you: _____

Do you have siblings? Yes No
If yes, how many? _____

Where do you belong in the sibling? 1st born, 2nd child, 3rd child, _____

Are you currently in contact with any of your siblings? Yes No
If yes, what is your relationship like with this/these siblings?

_____

_____

What was your mother's health status when she was pregnancy with you?
Good Poor I Don't Know

Were you born: full-term premature (how early? _____)

At approximately what age did you:
crawl _____ walk _____

say 1 word _____ say 2 + words _____

speak in sentences _____

know your numbers _____

say your alphabet _____

begin reading: _____

Is there anything else that you think would be helpful for me to know about you as we finish this part of the evaluation?

Appendix C

FAS BeST: Adult Other

Name of Person Completing this form:_____ Today's Date:_____

Name of Adult being assessed:_____ Date of Birth:_____

Relationship to the person being assessed:_____

How long have you known the person you are assessing (years or months):_____

Please read each item carefully considering the person you are assessing. Check the for each item that most closely identifies the frequency with which this adult displays the behavior.

Behavior	*Never*	*Sometimes*	*Frequently*	*Always*
1. Needs constant supervision				
2. Highly manipulative				
3. Exhausted from disrupted sleep				
4. Irritable from disrupted sleep				
5. Doesn't connect cause and effect (behavior and consequences)				
6. More difficulty managing behavior in public than at home				
7. Can't easily distinguish between friend and foe				
8. Impulsive				
9. Unpredictable				
10. Engages in dangerous behavior				
11. Appears desperate for stimulation or excitement				
12. Excessively vulnerable to peer pressure (moral chameleon)				
13. Shows anti-social behavior (disregard for others)				
14. Needs more structure and supervision than peers				
15. Has trouble learning/using concept of time				
16. Difficulty managing money				
17. Overreacts to negatively to change				

18. Extremely vulnerable to sales pitches				
19. Doesn't take care of hygiene needs				
20. Doesn't take responsibility for actions				
21. Cannot consistently follow a plan of action				
22. Doesn't follow rules of society				
23. Vulnerable to depression				
24. Vulnerable to stress and overload				
Behavior	*Never*	*Sometimes*	*Frequently*	*Always*
25. Lies/confabulates				
26. Steals from family members				
27. Appears to be more capable than he/she is				
28. Emotionally volatile; has outbursts				
29. Violent toward people				
30. Does not show normal level of empathy for others				
31. Unexplained mood swings				
32. Behavior doesn't improve/change with consistent consequences (makes the same mistakes)				
33. Looks innocent when confirmed guilty				
34. Continues to deny guilt when confronted with solid evidence				
35. Egocentric—acts on own needs first				
36. Unable to stay focused on task				
37. Detached attitude toward own behavior and its consequences				
38. Takes path of least resistance (easiest)				
39. Lives in the moment				
40. Chooses immediate gratification (can't wait for greater benefit)				
41. Doesn't display remorse (not sorry for doing something wrong)				
42. Recognized by others as disabled				
43. Appears undisciplined regardless of consistent discipline/consequences				
44. Charismatic				
45. Doesn't hold a grudge*				
46. Doesn't get the whole or big picture				
47. Misunderstands what is expected				

48. Predatory—plans to harm others*				
49. Becomes angry when confronted with wrong doing				
50. Thinks he/she is the exception to every rule				
51. Has trouble remembering rules from one day to another				
52. Diagnosed with a mental health disorder				

Behavior: Developmental	*Never*	*Sometimes*	*Frequently*	*Always*
53. Has difficulty *understanding* nonverbal communication (e.g. eye-to-eye gaze, facial expression, and body language)				
54. Has difficulty *using* nonverbal communication (e.g. eye-to-eye gaze, facial expression, and body language)				
55. Has difficulty developing friendships				
56. Wants to share enjoyment or interests with others (e.g. sharing objects of interest)				
57. Shows social and emotional give-andtake with others				
58. Is able to adequately communicate desires effectively				
59. Is able to start and continue conversations with others				
60. Engages in repetitive language (repeats what other people say)				
61. Has unrealistic view of the world				
62. Excessively preoccupied with a specific interest (video games)				
63. Engages in specific but unhelpful routines or rituals (checking and rechecking door locks for example)				

64. Engages in repetitive motor movements (e.g. popping fingers, finger or foot tapping)				
65. Has a preoccupation with parts of objects				
66. Shows inappropriate level of friendliness or familiarity with strangers				
67. Interrupts others or unexpectedly changes the topic during conversations				
68. Is more physically active than other adults (has to keep moving)				
69. Leaves tasks unfinished				
70. Seeks/enjoys physical contact (hugging)				
71. Intrudes other people's personal space (gets too close)				
72. Has obsessive thoughts				
73. Easily upset with changes in the routine				
Behavior	*Never*	*Sometimes*	*Frequently*	*Always*
74. Misreads social cues in the form of overly aggressive reactions to others				
75. Has slow reactions to injuries or pain				
76. Appears to be clumsy				
77. Has a slow response to instructions				
78. Has difficulty taking another person's perspective (e.g. overreaction when bumped by someone, assuming it was on purpose)				
79. Avoids eye contact				

Thank you for your responses. Please make any notes that you believe would be helpful for us to understand the person you are rating in the space below.

Comments:

Please return the complete form to the evaluator.

Appendix D

FAS BeST: Self Report

Name:_____ Date of Birth:_____

Gender:_____ Today's Date:_____

Read each item carefully considering your own interactions and behaviors. Check the for each item that most closely identifies the frequency with which you display the behavior.

Behavior	*Never*	*Sometimes*	*Frequently*	*Always*
1. I manage my life better when I am accountable to someone				
2. I can easily manipulate other people				
3. I am irritable when my sleep is disrupted				
4. I am surprised by how people respond to what I say				
5. I get in trouble for my behaviors or things I do				
6. I get irritated more easily in public than at home				
7. People fool me into thinking that they are my friend.				
8. People tell me I do things without thinking				
9. People tell me that I am unpredictable				
10. I have done things that are risky or dangerous				
11. I enjoy activities that others think are risky				
12. I have done things because of pressure from other people				
13. As a child I was known for breaking the rules more than following them				
14. I function better with more structure (a daily schedule)				
15. I lose track of time				
16. I have been in trouble because of my spending habits				
17. I don't like change				

18. I have been talked into making a large purchase by a very good salesperson (for example a TV or car)				
19. If I could get away with it, I would forget about showering or brushing my teeth				
20. I get blamed for things that are not my fault				
21. Even when I have a plan, I don't follow it				
Behavior	*Never*	*Sometimes*	*Frequently*	*Always*
22. I follow the law*				
23. I currently or in the past experience depression				
24. I can become easily overwhelmed/overloaded				
25. I lie to others				
26. I have borrowed family member's belongings without asking				
27. People think I am more capable than I am				
28. I get angry easily				
29. When I am upset, I take it out on something or someone around me				
30. When I get upset, I hurt people around me				
31. It is difficult for me to understand others' emotions				
32. My moods can easily change without a reason				
33. I have continued a behavior even though I get in trouble for it				
34. I get in trouble, even when I did nothing wrong				
35. People try to make me feel guilty for no reason				
36. I take care of myself first				
37. I have trouble staying focused				
38. When I get in trouble, I ignore it				
39. I like things to be simple and easy				
40. I like to live in the here and now not the past				
41. I don't like to wait for things I want				
42. When I do something wrong, I feel bad about it*				
43. Other people see me as disabled*				

44. All my life I have done things my own way				
45. I can get people to do things for me				
46. I hold grudges				
47. People tell me that I just don't get it				
48. I have difficulty understanding what people want from me				
49. I have thought about how I could harm others*				
50. When others try to tell me I did something wrong, I get angry				
Behavior	*Never*	*Sometimes*	*Frequently*	*Always*
51. I can find a way around the rules				
52. I have trouble remembering rules				
53. I have been diagnosed with a mental health disorder				
To Be Completed by Test Proctor Total 1-53				

Thank you for completing this rating sheet. If you have additional comments that would be helpful for us to know about you, please write them in the space below.

Comments:

Returned the completed form to your evaluator.

Appendix E
Informed Consent Form

Cognitive and Behavioral Functioning: Understanding Individuals in the Drug Court Process

Principal Co-Investigators: Glena L. Andrews, Ph.D., ABPP
Patricia Warford, PsyD

You are being invited to volunteer for a research study investigating the intellectual functioning, memory abilities, and behavioral traits found in adults with a history of involvement with the drug court. The goal of the research is to improve our understanding of cognitive and memory difficulties that negatively impact behavior changes.

Volunteers will be asked to take several tests which may require more than one session. The beginning of the testing will include an interview with one of the researchers. The tests include a brief intelligence test, Wechsler Adult Scale of Intelligence, a memory test, Wechsler Memory Scale, a test of planning and decision-making, The Delis-Kaplan Executive Functioning System, and the Personality Assessment Inventory. Volunteers will also be asked to rate their own behaviors on the FAS BeST Self Report, and ask a person who knows them well to complete the FAS BeST Other Report.

This study involves no known risk. There is no cost to the volunteer for the evaluation. All information will be kept confidential and kept secure. A volunteer's scores will not be given to anyone. All forms will be coded with a numerical code rather than names. If a volunteer is uncomfortable with any questions, he or she can skip the question. A volunteer can choose to discontinue the testing.

The benefit to participating is the volunteer will be given feedback about her or his areas of strengths and weaknesses. The volunteer will be given suggestions to help strengthen difficult areas. The data gathered will hopefully be used to help for others in similar situations.

Data will be studied and reported in groups not individually. Ethical guidelines as detailed by American Psychological Association are being followed. The researchers are willing to answer questions you may have at any point in the study. You may also contact Dr. Glena Andrews, 503-554-2386 or gandrews@georgefox.edu.

STATEMENT OF AGREEMENT TO PARTICIPATE

I have read/been read the description and have been informed as to the nature of this study and procedures involved. I understand the study involves no known risks and I may withdraw at any time without prejudice.

_____
Signature of Participant Date

_____ _____
Signature of experimenter Date

Graduate School of Clinical Psychology, George Fox University
Newberg, OR

Appendix F

Online Survey Structured Intake Questionnaire

1. You are invited to volunteer for a research study investigating behavioral traits found in adults. Volunteers will be asked to rate their own behaviors on a Self Report. This study involves no known risk. There is no cost to the volunteer for the survey. All information will be kept confidential and secure. A volunteer's scores will not be given to anyone. All forms will be coded with a numerical code rather than names. If a volunteer is uncomfortable with any questions, he or she can skip the question. A volunteer can choose to discontinue the testing. Data will be studied and reported in groups not individually. Ethical guidelines as detailed by American Psychological Association are being followed. This study was approved by the George Fox University Institutional Review Board (IRB) The researchers are willing to answer questions you may have at any point in the study. You may also contact Dr. Glena Andrews, 503-554-2386 or gandrews@georgefox.edu.

I have read/been read the description and have been informed as to the nature of this study and procedures involved. I understand the study involves no known risks and I may withdraw at any time without prejudice.

2. I am at * least 18 years old

Yes
No

Education
56. Did you attend preschool?
Yes
No

57. Did you attend kindergarten?
Yes
No

58. Did you repeat a grade?
Yes
No

59. If you repeated a grade, which grade did you repeat?

60. Were you on an Individualized Education Plan (IEP) while in school?
Yes
No

61. Did you graduate high school?
Yes
No

62. In what year did you graduate high school?

63. What was your GPA approximately in high school?

64. Did you play sports in high school?
Yes
No

65. If you played sports in high school, which sports did you play?

66. Did you attend college?
Yes
No

67. Did you earn a degree from college?
Yes
No

Occupation
68. What was your first job and how old were you?

69. What was your most recent employment?

70. How long have/did you work at your most recent employment (months or years)?

71. What was your longest held job? and how long were you employed (months or years)?

72. What was the job you held the shortest length of time? And how long were you employed (months or
years)?

Medical Health
73. Have you ever been hospitalized?
Yes

No

74. If you have been hospitalized, why were you hospitalized?

75. If you have been hospitalized, how long were you hospitalized?

76. Do you experience headaches more than once a week?
Yes
No

77. Do you experience seizures?
Yes
No

78. Do you experience tremors?
Yes
No

79. Have you recently experience weight loss?
Yes
No

80. Have you recently experienced weight gain?
Yes
No

81. Have you experienced changes in your hearing?
Yes
No

82. Do you experience difficulty keeping your balance?
Yes
No

83. Do you experience trouble understanding what others say?
Yes
No

84. Do you experience ringing in your ears?
Yes
No

85. Do you experience back pain?
Yes
No

86. Have you experienced a change in your ability to smell?
Yes
No

87. Have you experienced a change in your ability to see?
Yes
No

88. Have you experienced a change in your memory?
Yes
No

89. Do you experience trouble getting others to understand what your are saying?
Yes
No

90. Do you get lost in familiar places?
Yes
No

91. Do you experience trouble sleeping?
Yes
No

92. Do you experience depression?
Yes
No

93. Do you experience anxiety?
Yes
No

94. Have you ever experienced a head injury?
Yes
No

95. If you have experienced a head injury, what caused the head injury?

96. If you have experienced a head injury, Did you go to the emergency room/hospital/urgent care for
treatment?

Substance Use
97. How old were you when you first drank alcohol?

98. When you first drank alcohol, were you alone or with a group of people?
Alone
With a Group of People
I don't drink alcohol

99. How old were you when you first passed out from alcohol?
100. Did your biological father consume alcohol?
Yes
No
I Don't Know

101. Did your biological father become drunk more than once a week?
Yes
No
I Don't Know

102. Did your biological father pass out at home from drinking?
Yes
No
I Don't Know

103. Did your biological mother consume alcohol?
Yes
No
I Don't Know

104. Did your biological mother become drunk more than once a week?
Yes
No
I Don't Know

105. Did your biological mother pass out at home from drinking?
Yes
No
I Don't Know

106. Did your biological mother drink when she was pregnant?
Yes
No
I Don't Know

107. Have you used drugs?
Yes
No

108. How old were you when you first starting using drugs?

109. What was the first drug that you used?

110. What others drugs have you used?

111. What has been your drug of choice most recently?

112. Did your biological father use drugs?
Yes
No
I Don't Know

113. Did your biological father use drugs more than once a week?
Yes
No
I Don't Know

114. Did your biological father use drugs at home?
Yes
No
I Don't Know

115. Did your biological mother use drugs?
Yes
No
I Don't Know

116. Did your biological mother use drugs more than once a week?
Yes
No
I Don't Know

117. Did your biological mother use drugs at home?
Yes
No
I Don't Know

118. Did your biological mother use drugs when she was pregnant?
Yes
No
I Don't Know

119. Do you use tobacco products?
Yes
No

120. What type of tobacco products do you use?

121. How old were you when started using tobacco products?

122. What is the amount and frequency of your current use of tobacco?

123. Did your biological father use tobacco?
Yes
No
I Don't Know

124. Did your biological father use tobacco more than once a week?
Yes
No
I Don't Know

125. Did your biological father use tobacco at home?
Yes
No
I Don't Know

126. Did your biological mother use tobacco?
Yes
No
I Don't Know

127. Did your biological mother use tobacco more than once a week?
Yes

No
I Don't Know

128. Did your biological mother use tobacco at home?
Yes
No
I Don't Know

129. Did your biological mother use tobacco when she was pregnant?
Yes
No
I Don't Know

130. What types of treatment programs have you been in?

131. Of the treatment programs you have participated in, which was the most helpful and why?

You and Family
132. Are you...
Single
Married/Cohabitating
Separated
Divorced
Widowed

133. Do you have children?
Yes
No

134. How many children do you have?

135. With whom do the children currently live?

136. Do you have siblings?
Yes
No

137. How many siblings do you have?

138. Where do you belong in the sibling line-up? (1st born, 2nd child, 3rd child, etc)

139. Are you currently in contact with any of your siblings?

Yes
No

140. If you are in contact with your siblings, what is your relationship like with this/these siblings

Developmental
141. What was your mother's health status when she was pregnancy with you?
Good
Poor
I don't know

142. Were you born...
Full-term
Premature
I don't know

143. At approximately what age did you crawl?

144. At approximately what age did you walk?

145. At approximately what age did you say 1 word?

146. At approximately what age did you say 2 or more words?

147. At approximately what age did you speak in sentences?

148. At approximately what age did you know your numbers?

149. At approximately what age did you say your alphabet?

150. At approximately what age did you begin reading?

Final Page
151. What is your age?

152. What is your gender?

153. What is your ethnicity?

154. What was your first language?

English
Spanish
French
Other (please specify)

155. What other languages do you speak/understand?

Thank you for participating in our study. We appreciate your time.

Appendix G

Curriculum Vitae

Allison Mushlitz

Newberg, Oregon 97132
amushlitz15@georgefox.edu
208-305-2053

EDUCATION

2015-Present George Fox University, Newberg, Oregon
Graduate School of Clinical Psychology– APA Accredited
Clinical Psychology Doctoral Candidate
Anticipated Graduation Date: May 2020
Dissertation: *Defining an Adult Screener for Fetal Alcohol Spectrum Disorder: A Study of Court Populations*

2015-2017 George Fox University, Newberg, Oregon
Masters of Arts in Clinical Psychology

2011-2015 University of Idaho, Moscow, Idaho
Bachelor of Arts in Psychology
Minor in Business

CLINICAL EXPERIENCE

2019-Present **Texas Juvenile Justice Department, Mart Residential Treatment Center and McLennan County State Juvenile Correctional Facility**
Clinical Psychology Doctoral Internship
Supervisor: Jennifer Bennett, PhD
Mart, Texas

- Provided psychotherapy, conducted psychological evaluations such as determinate sentenced offender (DSO) evaluations, created treatment plans, collaborated with interdisciplinary teams, and conducted initial placement and suicide risk assessments.

2018-Present Oregon State Hospital
Clinical Psychology Practicum
Supervisors: Sarah Robertson, PsyD and Andrew Orf, PsyD
Salem, OR

- Provided individual and group therapy and assessment, collaborated with interdisciplinary treatment teams, and case management.

2016- Present Patricia Warford, PsyD, Licensed Psychologist, Private Practice
Forensic Psychology Supplemental Practicum
Supervisor: Patricia Warford, PsyD
Newberg, OR

- Supplemental practicum training in forensic assessment and evaluation. Conducted document review, psychological assessment administration and interpretation, and collaboration with Dr. Warford on forensic interviewing. Consulted with Dr. Warford on cases, reviewed data and testing results, provided current research as it applies to current evaluations.

Summer 2018 George Fox Behavioral Health Clinic
Supplemental Practicum
Supervisor: Joel Gregor, PsyD
Newberg, OR

- Supplemental practicum training. Provided psychotherapy, conducted assessments including diagnostic clarification and risk assessments, consulted with outside agencies, and case management.

2017-2018 NW Family Psychology
Clinical and Forensic Psychology Practicum
Supervisor: Jeffrey Lee, PhD
Clackamas, OR and Vancouver, WA

- Conducted forensic psychological and neuropsychological evaluations of children, adolescents and adults. Responsibilities included assessment administration, forensic interviewing, assessment scoring and interpretation, and report writing.

2016-2017 Clackamas High School

Clinical Psychology Practicum
Supervisors: Fiorella Kasaab, PhD and Sarah Pearlz, EdS
Clackamas, OR

- Provided individual therapy and conducted school-based evaluations for the special education program including assessing for learning and/or cognitive disability, autism, ADHD, and individual risk. Collaborated with individualized education program (IEP) interdisciplinary teams, teachers, parents, social workers, and other school district staff.

WORK EXPERIENCE

2012-2015 **Radio Morning Show Host for Bull Country 99.5**
Inland Northwest Broadcasting
Supervisor: Breanna House
Moscow, ID

2008-2010 **Legal Assistant**
Clark and Feeney, LLP
Lewiston, ID

RESEARCH EXPERIENCE

2015-Present *Defining an Adult Screener for Fetal Alcohol Spectrum Disorder: A Study of Court Populations*
Dissertation
Passed the Preliminary Defense in May 2018
Dissertation Committee: Glena Andrews, PhD (Chair), Patricia Warford, PsyD, and Kathleen Gathercoal, PhD

2014 University of Idaho
Study of older adults and online dating.

- .
- Research Supervisor: Annette Folwell, Ph.D.

PROFESSIONAL PRESENTATION

2019 *Cognitive Functioning Patterns and Fetal Alcohol Spectrum Disorder: A Study of Drug Court*
Poster Presentation at the Richter Symposium
Newberg, Oregon

2018 *FAS BeST: Behavioral Profile Screener for At-Risk Individuals*
Poster Presentation at the International Neuropsychological Society
Conference in Prague, Czech Republic

2018 *Psychological Foundations Toward Short-Term Care*
Presentation for Hillside Inn, a young adult transition & respite center
Presenters: Dylan Seitz, MA, Daniel Soden, MA, Allison Mushlitz, MA,
And William Summers, MA

2015 Presentation on the Graduate School Application Process
Psi Chi International Honor Society at the University of Idaho

PROFESSIONAL DEVELOPMENT AND TRAINING

3/2020 Psychosis & Schizophrenia Interventions
Didactic Training
Nicole Mekouris, MA and Danuta Godlewski, PsyD

3/2020 *Professional Development*
Didactic Training
Danuta Godlewski, PsyD

3/2020 *Generational Differences in the Workforce*
Didiactic Training
Danuta Godlewski, PsyD

3/2020 *Perceived Parental Acceptance-Rejection and Psychopathy*
Didactic Training
Evan Norton, PsyD

2/2020 *PowerSource*

Didactic Training
Danuta Godlewski, PsyD

2/2020 *Expert vs Fact Witness*
Didactic Training
Danuta Godlewski, PsyD and Laura Townsend, PsyD

2/2020 Jesness, Neuropsychology and Malingering Measures
Didactic Training
Evan Norton, PsyD

1/2020 *Juvenile Sex Offender Assessment Protocol- II (J-SOAP-II)*
Didiactic Training
Kathryn Hallmark, PhD

1/2020 *Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS)*
Didactic Training
Jamie Randle, PsyD

1/2020 *Sexual Behavior Treatment*
Didactic Training
Cami Cox, LSOTP and Danuta Godlewski, PsyD

1/2020 *Working with Gang Related Youth*
Didactic Training
Mr. Austin and Danuta Godlewski, PsyD

12/2019 *Crisis Stabilization Unit*
Didactic Training
Jamie Randle, PsyD

12/2019 *Alcohol and Other Drug Treatment*
Didactic Training
Ms. Guerra and Danuta Godlewski, PsyD

12/2019 *SAVRY assessment*
Didactic Training
Kathryn Hallmark, PhD

11/2019 *Non-Suicidal Self Injury*
Didactic Training
Danuta Godlewski, PsyD

11/2019 *Trauma Focused CBT*
Didactic Training
Kathryn Hallmark, PhD

11/2019 *Forensic Report Writing*
Didactic Training
Kathryn Hallmark, PhD

10/2019 *Working in Corrections*
Didactic Training
Danuta Godlewski, PsyD

10/2019 *Mental Health Status Review (MHSR) Hearing Training*
Didactic Training
Texas Juvenile Justice Department, Legal Department

10/2019 *Trauma Informed Care*
Didactic Training
Shandra Carter, MSW

10/2019 *Gender Roles*
Didactic Training
Danuta Godlewski, PsyD and Laura Townsend, PsyD

10/2019 *Texas Model* (Trust Based Relational Intervention)
Didactic Training
Troy McPeak and Evan Norton, PsyD

3/2019 *Marital Therapy: Gold Standard*
Douglas Marlow, Ph.D

2/2019 *Forensic Psychology*
Dio Safri, PsyD and Alex Milkey, Ph.D

10/2018 *Old Pain in New Brains: Pain Psychology Neuroplastic Transformation in*

Coordinated treatment teams can reverse pain and reduce risk of opiate addiction
Scott Pengelly, PhD

10/2018 Rorschach Certificate Training
Peter Grover, PhD

9/2018 *Spiritual Formation and the Life of a Psychologist: Looking Closer at Soul-Care*
Lisa Graham McMinn, PhD & Mark McMinn, PhD

3/2018 *Integration and Ekklesia*
Mike Vogel, PsyD

2/2018 *The History and Application of Interpersonal Psychotherapy*
Carlos Taloyo, PhD

11/2017 *Telehealth*
Jeff Sordahl, PsyD, ABPP/CN

10/2017 *Using Community Based Participatory Research (CBPR) to Promote Mental Health in American Indian/Alaska Native (AI/AN) Children, Youth and Families*
Eleanor Gil-Kashiwabara, PsyD

3/2017 *Difficult Dialogues*, Diversity Grand Rounds
Winston Seegobin, PsyD, Mary Peterson, PhD, ABPP, Mark McMinn, PhD, ABPP and Glena Andrews, PhD

3/2017 *Domestic Violence: A Coordinated Community Response*
Patricia Warford, PsyD and Sgt. Todd Baltzell

2/2017 *Native Self Actualization: It's assessment and application in therapy*
Sydney Brown, PsyD

11/2016 *Divorce: An Attachment Trauma*
Wendy Bourg, PhD

10/2016 *Sacredness, Naming and Healing: Lanterns Along the Way*
Brooke Kuhnhausen, PhD

6/2016 *Introduction to the MCMI-IV: Assessment and Therapeutic Applications*
Seth Grossman, PhD

4/2016 Private Practice Presentation, Professional Development
Brooke Kuhnhausen, PhD

3/2016 *CAMS (Collaborative Assessment and Management of Suicidality) Training*
Luann Foster, PsyD

3/2016 *SBIRT (The Screening, Brief Intervention, and Referral to Treatment) Training*
Jim Winkle, MPH

3/2016 *Managing with Diverse Clients*
Sandra Jenkins, PhD

2/2016 *Neuropsychology: What Do We Know 15 Years After the Decade of the Brain? and Okay, Enough Small Talk. Let's Get Down to Business!*
Trevor Hall, PsyD and Darren Janzen, PsyD

10/2015 *Let's Talk about Sex: sex and sexuality with clinical applications*
Joy Mauldin, PsyD

9/2015 *Relational Psychoanalysis and Christian Faith: A Heuristic Faith*
Marie Hoffman, PhD

GRANTS & AWARDS

- Richter Scholars Grant recipient, Fall 2018

COMMITTEES & LEADERSHIP

- Co-Founder of Forensic Psychology Special Interest Group at George Fox Graduate School of Clinical Psychology, Fall 2016-Fall 2017
- Secretary for Psi Chi International Honor Society at the University of Idaho, Fall 2014 to Spring 2015
- Psychology & Communication Department Tenure Committee representative, Fall 2014

HONORS

- Dean's List in Undergraduate
- Student Employee of the Year Nominee, Spring 2014

ADDITIONAL EXPERIENCES

- Youth Group Leader at Newberg Christian Church, Fall 2015- Spring 2018
- Volunteer with workshops for Girl Scouts, 2011-2015
- Volunteer with Shamrock Soccer Tournament events in Moscow, ID to help raise money for Prevent Child Abuse America and Boost Collaborative, Fall 2011-2015

PROFESSIONAL ASSOCIATIONS

- American Psychological Association
- Oregon Psychological Association
- American Psychology Law Society
- Psi Chi International Honor Society in Psychology