

A proposed model standard for forensic assessment of Fetal Alcohol Spectrum Disorders

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A model protocol is proposed for multidisciplinary assessment of Fetal Alcohol Spectrum Disorders (FASD) in the forensic context. Used effectively on both sides of the courtroom in the United States in criminal and post-conviction matters in state and federal courts, the model relies on the FASD literature and best-practice standards of care in terms of clinical as well as forensic evaluation. It is suggested that FASD diagnostic criteria for older adolescents and adults in the criminal system may need different emphasis if facial features have diminished with age and confirmation of prenatal exposure is impossible.

KEY WORDS: *FASD, multidisciplinary assessment.*

It has been known for many years that persons with Fetal Alcohol Spectrum Disorders (FASD) are at high risk of criminal behavior. According to criminal offender statistics maintained by the Department of Justice (Criminal Records

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Nationwide Criminal Search, 2008), the lifetime risk of going to state or federal prison in the United States is 3.4% (18.6% for blacks and 10% for Hispanics). While comparable statistics have never been compiled for individuals with FASD, a large government-sponsored study at the University of Washington in the mid-1990s found that approximately 60% of children, adolescents, and adults in this population had histories involving arrest, conviction and/or incarceration (Streissguth, Barr, Kogan, & Bookstein, 1996). Approximately 45% of these crimes involved crimes against persons, including assaults (17%) and domestic violence (15%). Since that historic study, only one comparative analysis has ever examined the prevalence of FASD within a discrete criminal justice population. In that analysis, all 287 youth remanded during a one-year period to a psychiatric facility in British Columbia were evaluated, and researchers (Fast, Conry, & Looch, 1999) found that 23.3% had FASD. Only 1% of those with FASD received a diagnosis of Fetal Alcohol Syndrome (FAS), and the rest were diagnosed with Alcohol Related Neurodevelopmental Disorder (ARND). Both conditions are included under the FASD umbrella and involve brain damage and associated neurocognitive dysfunction due to prenatal alcohol exposure.

Combined, the implications of the British Columbia study and the earlier University of Washington study are alarming. If, according to the Department of Justice, over 2 million adults are now incarcerated in U.S. prisons and jails (Leary, 2009), plus approximately 100,000 youth held in juvenile facilities (Sickmund, 2010), what is the significance of these rates with respect to juvenile and adult offenders who may be brain damaged due to FASD? Most importantly, what do these figures mean with respect to the 3261 men and women now on death row in the United States (Fins, 2010)? Acknowledging the extensive Central Nervous System (CNS) damage in this population that produces a constellation of neurocognitive deficits in memory, attention, language, motor skills, social skills, academic achievement, cognition, and

“executive control” difficulties in planning, organizing, learning from past mistakes, linking cause and effect, anticipating consequences, and taking the perspective of others, Moore and Green (2004) note:

This constellation of deficits poses significant obstacles to the fair treatment of FASD persons in the criminal justice system. Persons with FASD, as a group, challenge the underlying premise that defendants understand the relationship between actions, outcomes, intentions, and punishment. The treatment of FASD defendants raises fundamental questions about how we assess individual responsibility, both at the guilt-determining and sentencing stages of the adjudicative process. (p. 3)

The Substance Abuse and Mental Health Services Administration Fetal Alcohol Spectrum Disorders Center for Excellence (SAMHSA; 2007, para. 6) agrees that FASD merits special legal consideration: “Individuals with FASD typically are impulsive and have trouble foreseeing the consequences of their actions. . . . [This] presents challenges throughout the judicial process—from questioning through arrest, hearings, sentencing, and detention.” U.S. Courts are beginning to recognize that FASD deserves special consideration. For example, in *Dillbeck v. State*, 643 So.2d 1027 [Fla. 1994], the Court made a point that FASD merited consideration in both the guilt-innocence phase and mitigation or sentencing phase:

Evidence concerning certain alcohol-related conditions has long been admissible during the guilt phase of criminal proceedings to show lack of specific intent . . . (I)f evidence of a self-induced condition such as voluntary intoxication is admissible, then so too should be evidence of other commonly understood conditions that are beyond one’s control, such as epilepsy . . . Just as the harmful effect of alcohol on the mature brain of an adult imbiber is a matter within the common understanding, so too is the detrimental effect of this intoxicant on the delicate, evolving brain of a fetus held in utero. As with ‘epilepsy, infancy or senility,’ . . . we can envision few things more certainly beyond one’s control than the drinking habits of a parent prior to one’s birth. We perceive no significant legal distinction between the condition of epilepsy . . . and that of alcohol-related brain damage in issue here—both are specific, commonly recognized conditions that are beyond one’s control.

It is important to note that FASD is relevant on both sides of the courtroom. Not only should defense teams explore the possibility of FASD in their cases if they suspect a defendant may have been exposed to alcohol in utero, but prosecutors as well may want to present evidence of victim vulnerability to the Court. In our own experience working as a multidisciplinary FASD assessment team with state and federal prosecutors, enhanced sentencing has been obtained for victims determined in forensic evaluation to have FASD. In one such case, an adult female who was raped by an adult male relative was shown to have FASD, which resulted in an upward departure in the defendant's sentence.

While there appears to be growing recognition that FASD is relevant in the criminal justice system, review of over 100 cases on the Legal Issues Resource Center website (<http://depts.washington.edu/fadu/legalissues>) maintained by the Fetal Alcohol and Drug Unit at the University of Washington indicates that FASD has been raised as a relevant defense issue in only slightly over 100 cases in the United States over the past 20 years. Given the disproportionately large number of defendants likely to have FASD, this small number suggests that many defendants are convicted each year without awareness by anyone that they have brain damage. Moreover, analysis of the case law that has been summarized on this website reveals an imperfect understanding of the diagnostic process, symptoms, and behavioral consequences of FASD (Wartnik, in press), which understandably affects outcome. There are many reasons for this misunderstanding, not the least of which is the complex nature of FASD and associated difficulty in adequately explaining diagnosis to the court in a way that makes the science understandable and case relevant. Other problems include lack of identification by legal teams that a case may involve FASD or difficulty in tracking down information on the prenatal exposure history of defendants (or alleged victims, for that matter). Other misconceptions that complicate identification and eventual forensic assessment include:

- persons with IQs in or near the average range couldn't have FASD and/or couldn't have neurocognitive deficits that cause them to function at levels similar to those with intellectual disabilities;
- superficially "good" verbal skills preclude FASD;
- the absence of facial abnormalities either rules out FASD or indicates that functional deficits cannot be severe;
- if a birth mother denies drinking and drug use during pregnancy, her denial should be taken at face value;
- a complete absence of maternal drinking evidence after extensive investigation precludes FASD (i.e., in the presence of all the facial features, growth deficit, and CNS abnormalities, FAS can be diagnosed even without confirmation of maternal drinking);
- acute substance intoxication and/or intentional antisocial conduct fully "explain" offense behavior in someone known to have been exposed prenatally to alcohol; or
- basic ability to "plan" pursuit of an offense objective is equivalent to the more complex cognitive process of determining an objective, reflecting on anything that might be relevant to pursuit of the objective (e.g., generalizing past mistakes that are similar to the present objective, foreseeing consequences, considering impacts on self and others, appreciating the implications of the act), and being able to stop oneself from acting on impulse.

In an effort to address some of these misconceptions and problems associated with bringing FASD into the courtroom, a coalition of mental health professionals associated with the Fetal Alcohol and Drug Unit at the University of Washington formed in 2007 to conduct forensic assessments. Calling ourselves "FASD Experts," our goal was to develop a protocol for forensic FASD assessment that could be replicated by other forensic groups so as to expand awareness of this significant medical condition within the forensic context and increase diagnostic accessibility. What follows in the balance of this article is a description of that protocol.

Multidisciplinary assessment

Since FASD is a medical condition, diagnosis must be made by a medical doctor. However, current diagnostic guidelines require functional as well as physical assessment. Consequently, other specialists also are required as noted in diagnostic guidelines published by the Centers for Disease Control (Bertrand et al., 2004, p. 3): FAS diagnosis (is) confirmed using dysmorphic and anthropometric assessment procedures along with appropriate neurodevelopmental data.

For almost 40 years, diagnosing a condition due to prenatal alcohol exposure has involved three primary criteria plus “confirmation” that the exposure actually occurred. Solid evidence of prenatal alcohol exposure may be difficult if not impossible to achieve in forensic situations involving older defendants with few living relatives (including birth mother) and incomplete records. In cases such as this, the presence of typical neurocognitive abnormalities without the standard clinical phenotype may be sufficient for an experienced diagnostician to make a case for FASD, especially if some of the facial abnormalities are still present and the birth mother was known to have abused alcohol at some point in life. In such cases, family history as well as pregnancy and birth records is critical, as well as good documentation about early infant and child development.

The primary FASD diagnostic criteria are: (a) three specific facial abnormalities (i.e., short palpebral fissures or eye openings, flat philtrum or groove below the nose, and small upper lip circumference); (b) prenatal or postnatal growth deficit (i.e., significant deficit in height and/or weight); and (c) Central Nervous System (CNS) damage. Medical doctors are responsible for assessing the physical manifestations of FASD (face and growth deficits). CNS damage is investigated in three ways: structural, neurological, or functional assessment. Of these, the generally accepted approach in clinical FASD diagnosis is functional assessment, which requires

cognitive-behavioral assessment by specialists (usually psychologists). Structural and neurological assessment usually falls within the domain of medical doctors. Functional assessment, on the other hand, may involve several specialists. For children, multidisciplinary teams may consist of social workers or RNs who handle case management, educators, speech and language professionals, and/or occupational and physical therapy technicians. For older adolescents and adults who are beyond the school years, mental health specialists conduct neuropsychological assessment and investigate the lifelong impact of prenatal exposure on functional capacity, including adaptive functioning.

There is no reason why FASD assessment in the legal context shouldn't model the standard of care in the clinical context, which means multidisciplinary team assessment including a trained medical doctor and psychologist at a minimum. There should be at least one forensically trained person on the multidisciplinary team who can explain to the Court how the neurocognitive deficits in FASD produce Cognitive Disorder Not Otherwise Specified, which in mental health diagnostic terminology is equivalent to the legal concept of "mental defect." Beyond the diagnosis itself, there also is the challenge of explaining how FASD affected a defendant's lifelong functioning and, in particular, his or her instant offense conduct. Explaining the relevance of FASD to the forensic issue at hand requires an expert with forensic expertise as well as expertise in FASD.

The central role of executive functioning

Much of the misunderstanding about the relevance of FASD in the criminal context, including how it affects criminal conduct, stems from a common misconception that individuals with FASD who have average or low average IQs also have corresponding functional capacity. However, while most persons with FASD have IQs in the average to borderline ranges

(Streissguth et al., 2004), they tend to function adaptively like individuals who are intellectually disabled. This is due in large part to the impact of prenatal alcohol exposure on frontal lobe development where executive functioning is controlled. Most individuals diagnosed with FASD have deficits in executive functioning (Connor et al., 2000; Burden et al., 2009; Vaurio, Riley, & Mattson, 2008; Fryer et al., 2007; Mattson, Calarco, & Lang, 2006). Executive functioning involves a set of higher order cognitive skills necessary for adaptive self-regulation. These skills include planning (while also considering consequences and lessons learned from previous mistakes), sensory processing (accurately perceiving and efficiently processing environmental information), decision making (weighing alternatives and choosing the most appropriate option while taking into consideration potential outcomes), and response inhibition (controlling behavioral impulses that are likely to result in negative outcomes). These executive skills are not only involved in the reflection process required for “deliberate” and “intentional” criminal conduct. Response inhibition is necessary for the final step in this cognitive process once reflection is completed: stopping oneself from engaging in a criminal act. There is a robust finding in the literature that among all the executive function deficits associated with prenatal alcohol exposure, most individuals with FASD have significant impulse control problems (Burden et al., 2009; Mattson et al., 2006).

In the criminal context, FASD-associated problems in reflection, forming intent, and carrying out effective goal-directed behavior are directly relevant to mental state. While this population tends to function adequately in familiar, highly structured situations (such as IQ test settings), their behavior often breaks down or decompensates in novel high-stress situations due to their multiple executive function limitations (Streissguth, 1997; Streissguth et al., 2004), which establish a biological ceiling on their capacity to self-regulate. This decompensation often leads to instinctive fight or flight reac-

tions: either fleeing from stressful confrontation or using excessive force to gain a primary objective. Although individuals with FASD are capable of simple planning (including offense behavior), they typically think only of the goal with a narrow, single-minded focus, neglecting previous learning experiences, consequences, and impact on themselves and others. This executive deficit in cause-and-effect thinking is observed in most individuals with FASD (Streissguth et al., 1991) because they have difficulty holding disparate bits of information in working memory and taking this information into account during the reflection process. Because this population also tends to lack the executive ability to monitor and appreciate where their behavior is leading them, perseveration is common. Perseveration used in this context refers to the inability to change course midstream, despite obvious negative consequences.

FASD-associated CNS deficits also affect behavior once individuals with FASD are in custody, which affects all aspects of the legal process. Because of their lack of cognitive sophistication, persons with FASD tend to be suggestible, prone to waiving their rights, and inclined to acquiesce with authority figures—all of which can affect the accuracy of any statements they might make. Rational understanding of the legal process and ability to assist counsel in defense also may be impaired. However, once individuals with FASD are incarcerated awaiting trial or in prison following sentencing, they typically do not present a significant risk of future dangerousness regardless of their instant offense because they tend to function adequately in highly controlled, supervised environments that reduce the need for personal decision making (SAMHSA, 2006).

Screening by the legal team

The first step in forensic FASD assessment is identification by a legal team that a client (or victim) may have been prenatally exposed to alcohol. For instance, suspicions might be

raised if it is known that a birth mother abused drugs or that a client was in Special Education during childhood. To date, only four empirically developed screening tools have been reported in the peer-reviewed literature (Astley & Clarren, 1996; Mutsvangwa et al., 2009; Burd et al., 1999; Streissguth, Bookstein, Barr, Press, & Sampson, 1998), but none of these tools apply to the forensic context. The FASD Youth Justice Project in Manitoba uses a brief tool to screen for possible FASD in youth 12 to 18 years of age who have confirmed prenatal alcohol exposure. Items on the tool include repeated failure to comply, lack of empathy, poor school experiences, difficulties within institutions (i.e., compliance, peers, academics), inability to connect actions with consequences, being unaffected by punishment, taking a follower rather than leader role in crime, and engaging in risky crimes with little potential gain. While screening with this tool was reportedly effective (Goh et al., 2008), with 50/178 individuals receiving diagnostic assessment and 29 of those 50 ultimately receiving an ARND diagnosis and 1 receiving an FAS diagnosis, the measure is not in general use outside the Manitoba province.

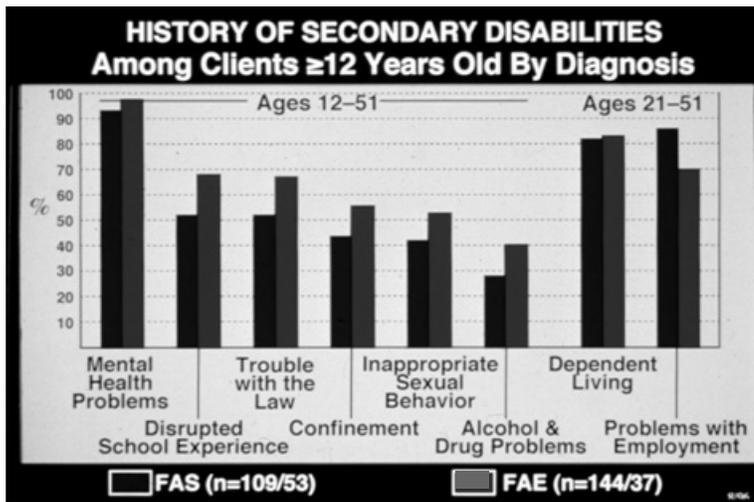
In British Columbia, the Asante Center is working with local probation officers to develop a screening tool and referral process for juveniles involved in the criminal justice system. Although the tool appears to be quite promising because items are anchored in the FASD literature and may have general forensic applicability, it is still in the developmental stage and has not yet been published. In lieu of a published forensic screening tool, FASD Experts suggests an informal checklist (Appendix A) that contains empirically validated factors known to be associated with FASD. There is no magic number of endorsed items on this checklist that guarantees a diagnosis of FASD. However, if several items are endorsed in each category, referral for a forensic FASD assessment is recommended—especially if the legal team has information suggesting the possibility of prenatal alcohol and/or drug exposure.

Adapting the clinical protocol to the forensic context

Beyond the importance of using a diagnostic protocol that is consistent with the clinical standard of care, several other factors are necessary in a forensic context, such as grounding assessment procedures in the FASD science. Toward that end, given the large amount of information now known about the neurocognitive deficits and behavior in persons with FASD, forensic assessment can incorporate best practice in scientific investigation: examining whether the individual’s history matches a priori hypotheses about life course expectations in those with FASD. If a particular defendant (or victim) has FASD, then certain life course outcomes are expected if he or she has been exposed to adverse childhood experiences but has never received appropriate interventions. If life course history is not consistent with what is observed in this population, such a finding would tend to undermine the forensic hypothesis that the person has FASD. The chart in Exhibit 1 below depicts several negative life course outcomes that have been identified in individuals with FASD:

EXHIBIT 1

Adapted from Streissguth et al. (1996)



Because of the detailed findings in this large study (Streissguth, Barr, Kogan, & Bookstein, 1996), there can even be a priori hypotheses regarding the nature of criminal conduct in this population. For example, as the above chart depicts, while persons with FASD are at high risk of having trouble with the law, those at highest risk are not those with FAS but rather those with Fetal Alcohol Effects or FAE, which in today's terminology would include Partial FAS and ARND. With regard to the exact nature of the criminal conduct seen in this population, shoplifting is often the first documented crime (Streissguth et al., 2004). The most frequently described law violations were crimes against persons (45%), which included shoplifting/theft (36%), burglary (15%), assault (17%), and domestic violence (15%). Among adolescents and adults with histories of inappropriate sexual behavior, 18% had displayed sexual aggression. Other crimes included running away, property damage, and vehicular crimes. Trouble with the law began at a mean age of 12.8 years.

The high percentage of theft in the FASD population is likely due to executive function deficits (e.g., boundary confusion, poor judgment, impulse control problems, and difficulty learning from experience and foreseeing consequences) that affect self-regulation with respect to objects and personal space. With respect to the latter, executive deficits also affect the way individuals with FASD handle sexual urges, which accounts for the large percentage of individuals in this population who engage in sexually inappropriate behaviors. In fact, while no studies have examined this issue in adults who have been detained and/or committed as "sexually violent predators," it is likely that many of these individuals aren't so much sexually deviant or antisocial as brain damaged.

Although a large number of persons with FASD commit assaults and domestic violence, it is unknown how many commit homicide. As with other crimes committed by persons with FASD, executive function deficits typically worsen in unstructured, high stress situations and are likely central to such

crimes. For example, relevant deficits may involve the misperception of environmental stimuli (typically, visual and auditory stimuli), problematic integration and interpretation of that information, failure to modulate emotional responses, and ultimately, lack of impulse control. Of course, this entire flawed information processing/control process typically takes place in a split second, which adds two additional elements to the equation for individuals with FASD who also have delayed processing speed paired with an overly rapid response tendency (Burden et al., 2009; Burden, Jacobson, & Jacobson, 2005). The more of these information processing and control processes that are impaired, the more likely there will be a catastrophic outcome. Of over 40 cases assessed by FASD Experts from 2007 to the present, almost half have involved individuals either in the trial stage or post-conviction appeal stage for capital murder. Nearly all of these individuals displayed significant neuropsychological deficits in executive functioning—especially in unstructured versus structured contexts.

Another important factor in the forensic application of FASD is the importance of using procedures that meet evidentiary requirements as case law requires a showing that expert testimony is admissible as evidence. The two most significant tests in this regard are the *Daubert* and *Frye* rulings that deal with the scientific reliability of an expert's testimony. Therefore, testing within the forensic context should involve standardized measures that have been documented as reliable. Another important aspect of sound forensic investigation within the mental health sector is convergent evidence from multiple sources for legally relevant conclusions. The FASD assessment protocol itself should be transparent as well, with general consistency and standardization from case to case.

Diagnostic guidelines

There are three diagnostic protocols commonly used in the United States: Institute of Medicine (IOM) (Stratton, Howe,

& Battaglia, 1996), 4-Digit Code (Astley, 2004; Astley & Clarren, 1997, 1999), and the Centers for Disease Control (CDC) (Bertrand et al., 2004). Clinical providers in Canada often use the 4-Digit Code along with their own diagnostic protocol (Chudley et al., 2005), which is similar in many respects to the CDC protocol in the United States. All of these diagnostic protocols are based on multidisciplinary assessment, and all require reliable evidence of facial, growth, and CNS abnormalities. However, confirmation of prenatal alcohol exposure is handled somewhat differently. For example, IOM criteria (Stratton et al., 1996) describe significant alcohol exposure as a pattern of excessive intake characterized by substantial, regular intake or conversely, heavy episodic drinking. Evidence of such a pattern might include frequent episodes of intoxication, development of tolerance or withdrawal, drinking-related social or legal problems, engaging in physically hazardous behavior while drinking, or alcohol-related medical problems such as hepatic disease.

The 4-Digit Code (Astley, 2004; Astley & Clarren, 1997, 1999) defines four levels of prenatal alcohol exposure. Rank 4 is equivalent to confirmed exposure to high levels of alcohol; Rank 3 involves confirmed exposure at a level less than Rank 4, or the level is unknown; Rank 2 is assigned if exposure is unknown (neither confirmed absent nor confirmed present); and Rank 1 indicates confirmed absence of exposure from conception to birth. High exposure is defined generally as alcohol equivalent to six to eight beers consumed weekly, early in pregnancy, by a woman weighing 55 kg. or approximately 120 pounds. Astley (2004) provides examples of these rankings. For instance, Rank 4 exposure would be assigned to a birth mother who reports drinking to the point of intoxication weekly throughout pregnancy. Rank 3 would include a birth mother observed to be drinking an unknown amount during pregnancy or a birth mother who reported drinking a glass of wine weekly but stopped drinking at three months gestation when she learned she was pregnant. Rank 2 exposure, which involves unknown exposure history, might

include adopted individuals for whom no relevant records exist or individuals whose mothers were known to have a drinking problem, but there are no records or direct observation of her drinking during the index pregnancy. Rank 1 would include a birth mother who never drinks or planned pregnancies where the birth mother was intentionally abstinent during the entire time she was trying to conceive.

The CDC guidelines state:

- FAS with confirmed prenatal alcohol exposure requires documentation of the alcohol consumption patterns of the birth mother during the index pregnancy on the basis of clinical observation; self-reports; reports of heavy alcohol use during pregnancy by a reliable informant; medical records documenting positive blood alcohol levels or alcohol treatment; or other social, legal, or medical problems related to drinking during the index pregnancy.
- FAS with unknown prenatal alcohol exposure indicates neither a confirmed presence nor a confirmed absence of exposure. Examples include situations in which the child is adopted, and any prenatal exposure is unknown; the birth mother is an alcoholic, but confirmed evidence of exposure during pregnancy does not exist; or conflicting reports regarding exposure exist that cannot be reliably resolved. (CDC, 2005, p. 3)

The Canadian diagnostic guidelines define prenatal exposure as follows:

Prenatal alcohol exposure requires confirmation of alcohol consumption by the mother during the index pregnancy based on reliable clinical observation, self-report, reports by a reliable source or medical records documenting positive blood alcohol, alcohol treatment, or other social, legal or medical problems related to drinking during the pregnancy. The number and type(s) of alcoholic beverages consumed (dose), the pattern of drinking and the frequency of drinking should all be documented if available" (Chudley et al., 2005, p. S11).

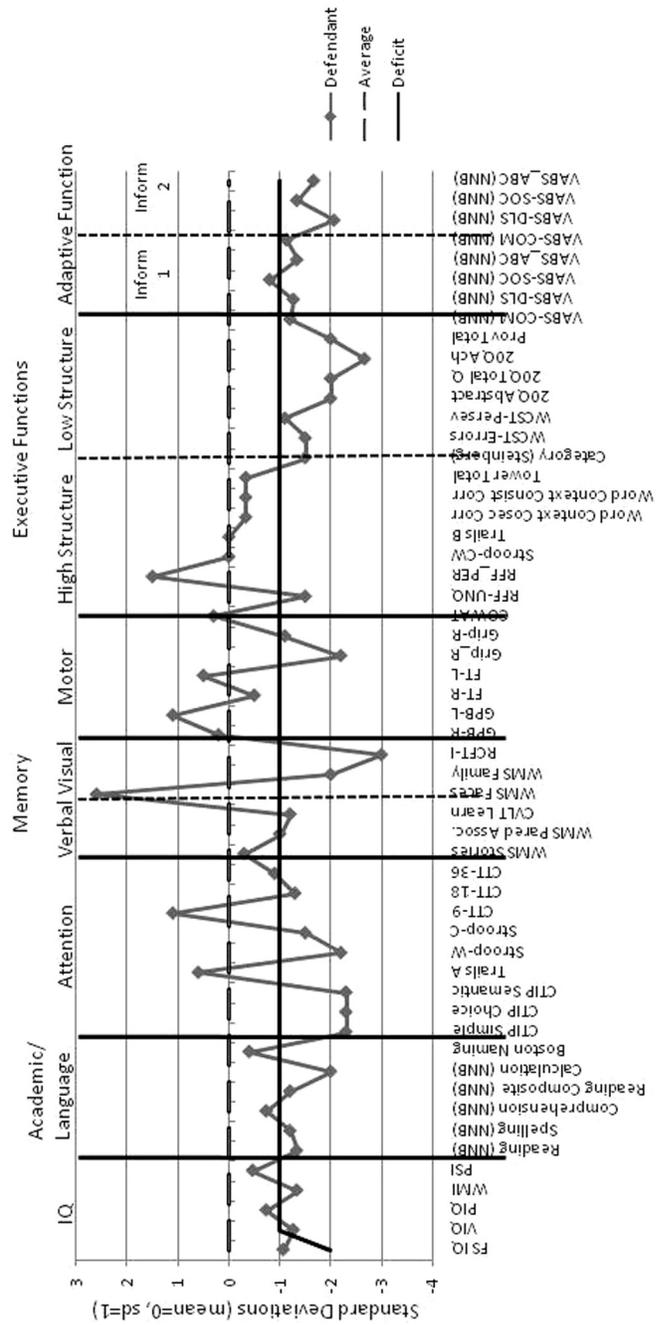
The Canadian guidelines (Chudley et al., 2005) also recommend recording of other factors that may interact with neurocognitive deficits and affect functioning, such as co-occurring disorders and psychosocial stressors and prenatal exposure to other substances (e.g., smoking, licit or illicit drugs).

Multidisciplinary assessment process

Once a referral has been made to a forensic diagnostic team, we recommend that the assessment process begin with neuropsychological testing. As FASD involves structural brain damage with presumably lifelong neurocognitive deficits, if there are no current deficits, then there likely is no FASD. According to the CDC guidelines (CDC, 2005), there must be significant impairments which are defined as either a global or full scale IQ below 70 and/or impairments in at least three other functional domains (e.g., cognition, memory, attention/hyperactivity, academic achievement/learning, information processing, sensory integration, speech and language, adaptive/social functioning, executive functioning) that fall 1 or more standard deviations below the mean on standardized testing. Given the forensic context, measures of malingering should be employed in the neuropsychological test battery. The chart in Exhibit 2 below, excerpted from a recent FASD Experts case involving a defendant diagnosed with Partial FAS, summarizes neuropsychological test data in a format where neurocognitive deficits can be easily identified and counted. The tests in this exhibit are listed on the abscissa axis. The horizontal green line represents the mean for each test (a standard score of "0") and the horizontal red line represents the diagnostic threshold that distinguishes deficient test performance from average performance. For full scale IQ where the red line dips, the diagnostic threshold is 2 standard deviations below the mean; for all other functional domains, the threshold is 1 standard deviation below the mean.

As shown in Exhibit 2, this defendant had a mixed pattern of neurocognitive functioning with relative strengths mixed with relative weaknesses. This mixed pattern often is observed in FASD (Connor et al., 2000) as the teratogenic effects of alcohol affect whatever developmental process is occurring in the fetus (or embryo) at the time of exposure. Also evident and forensically relevant in the chart is the discrepancy between IQ and other functional abilities. While this defendant had a full scale

EXHIBIT 2
Results of Neuropsychological Testing Depicted in Standard Deviations from the Mean



IQ that fell approximately 1 standard deviation below the mean or in the low average range (approximately 85), he had multiple neurocognitive deficits in other functional domains that fell 1 to 3 standard deviations below the mean. One of the forensically relevant aspects of this profile is his significantly deficient academic achievement, which indicates that he not only had difficulty learning academic subjects like reading and arithmetic, he also was unable to learn from other lessons such as life experience. While deficient working memory appears to have had some impact on his ability to learn, his neuropsychological profile indicates that other neurocognitive skills also affected his learning capacity such as inability to generalize or apply retained information to new problems or contexts. The ability to generalize is an abstract executive skill.

Given the relevance of many neurocognitive skills to forensic issues, the test battery used in neuropsychological evaluation should incorporate adaptive assessment as well as intellectual, academic achievement, attention and impulse control, memory, motor skills, and executive functioning. The latter should include tests found in FASD research to be particularly susceptible and relevant to FASD-associated impairments. The following list contains some of the tests used in our assessment process:

1. Intellectual functioning: The *Wechsler Adult Intelligence Scale—4th Edition* (WAIS-IV) (Wechsler, 2008) assesses four sub-domains of intellectual functioning as well as full scale IQ: verbal comprehension, perceptual organization, working memory, and processing speed.
2. Academic achievement: The *Wide Range Achievement Test—4th Edition* (WRAT-4) (Wilkinson & Robertson, 2006) measures the ability to learn academic skills in four areas: word reading, reading comprehension, spelling, and arithmetic.
3. Learning and memory: Auditory learning and memory are assessed with the *California Verbal Learning Test* (CVLT) (Delis, Kramer, Kaplan, & Ober, 1999), which involves a list learning task. Nonverbal memory and visuospatial construction are assessed with the *Rey Complex Figure Test* (RCFT) (Meyers & Meyers, 1995).

4. Attention: Attention is assessed in a visual modality by using the *Conners' Continuous Performance Test* (CPT) (Conners, 2004), which is a computerized test that measures sustained attention and impulsivity. Of special interest on this test is the assessment of variability of response time as this has been demonstrated to be an issue in research on FASD (Connor et al., 1999; Coles, Platzman, Lynch, & Freides, 2002).
5. Motor coordination: This domain is assessed through multiple measures. *Grooved Pegboard* is used to assess speeded eye-hand coordination, *Finger Tapping* is used to assess speeded finger movement, and *Grip Strength* is used to assess general strength. Research has demonstrated that coordinated motor functioning is often impacted in FASD.
6. Executive functioning: This is a domain that involves assessment of multiple domains, including problem solving, learning from mistakes, generation of ideas, flexibility, and multitasking. Because executive functions are multidimensional, several tests are administered to assess it. Scanning and switching of attentional rules are assessed with the *Trail Making Test* (TMT). Fluency in generation of ideas is assessed with the *Controlled Oral Word Association Test* (COWAT) in the verbal modality and *Ruff's Figural Fluency Test* (RFF) (Ruff, 1996) in the nonverbal modality. Response inhibition is measured with the *Stroop Test* (Golden & Freshwater, 2002). Working memory and multitasking are assessed with the *Consonant Trigrams Test* (CTT) (Stuss, Stethem, & Pelchat, 1988; Stuss, Stethem, & Poirier, 1987). Planning, problem solving, rule switching, and learning from past mistakes are measured with three tests: *Wisconsin Card Sorting Test* (WCST) (Heaton & PAR Staff, 2005), *Delis-Kaplan Executive Function System* (D-KEFS) (Delis, Kramer, & Kaplan, 2001) *Tower Test* and *Proverbs Test*.
7. Adaptive functioning: Adaptive functioning is assessed with the *Vineland Adaptive Behavior Scale* (VABS) (Sparrow, Cicchetti, & Balla, 2005), which involves a detailed interview of an individual with considerable knowledge of the defendant's daily functioning. Research with individuals with FASD has demonstrated that adaptive functioning tends to be significantly more deficient than IQ in this population and is indicative of real-world deficits in appropriate functioning (Streissguth et al., 1996).

If malingering and other factors that might affect an examinee's test performance are ruled out, results obtained on neu-

ropsychological tests may fall near the top of an individual's skill range. This "maximum potential" outcome is due to the structure that must be employed during testing (e.g., minimizing environmental and social distractions, and test protocols that dictate the specific manner of responding) to ensure reliability. Test conditions, which are typically described in detail in test manuals, must resemble to the extent possible those used during test development, even when testing is done in jails or prisons. Even under structured testing situations, some tests allow for a little more cognitive control by the subject. As can be seen in the profile shown above, the defendant in this case example had significant difficulty performing executive function tests that gave him relatively more control versus those that were tightly structured. Such disparity depicts in a graphic way what happens in the real world when stressful, fast-paced events occur in unfamiliar situations where there is no predetermined structure or routine. The relevance of this dynamic in terms of offense conduct cannot be overstated.

The above chart shows that this defendant had numerous executive skill deficits. As previously noted, executive functioning affects all aspects of information processing, from perception to integration and interpretation to action or inaction. Thus, if perceptual skills are impaired by attention deficits, it follows that inaccurate information will feed into the next step in the process, integration. Integration relies heavily upon the ability to recall important related information or experiences, which enables contextual assessment of the meaning and significance of input, including its relation to previous information and relevance to anticipated events. Both perception and integration affect the next stage in the information processing cycle: interpretation. If brain structures responsible for different elements of self-regulation do not communicate efficiently, then interpretation of input that has been perceived and integrated also may involve another step (emotion modulation), particularly if the input is interpreted as threatening or dangerous. If all of these cognitive processes are impaired and/or slowed, the individual may resort to instinctive fight or

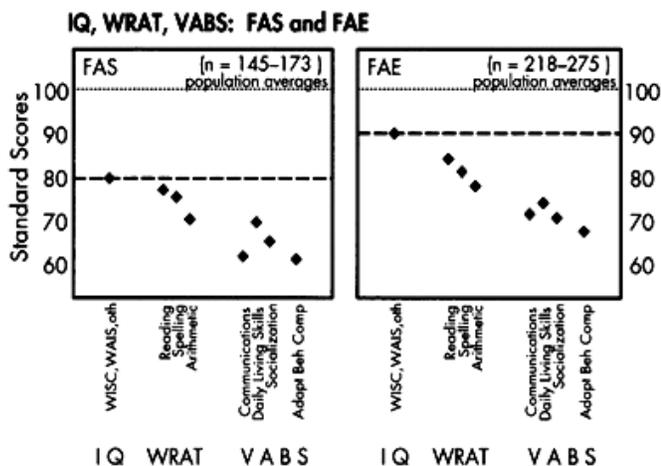
flight. In this particular defendant's case, he killed his wife in a heated argument. His neuropsychological chart displays his difficulty in processing information in unstructured versus structured situations, demonstrating graphically the importance of social context in his case.

Another way of looking at this performance difficulty in those with FASD is through the disparity or "downward slope" found in IQ and adaptive functioning scores. Using IQ as a benchmark that establishes an upward limit on how someone with FASD might be expected to function, the charts in Exhibit 3 below (Streissguth et al., 1996) depict how individuals in this population typically function. The chart on the left shows test results for individuals diagnosed with FAS and a mean IQ of 79, and the chart on the right shows test results for individuals diagnosed with FAE (i.e., Partial FAS or ARND) and a mean IQ of 90. For individuals without FASD, standard scores for academic achievement in reading, spelling, and math should roughly resemble IQ. Thus, whether the IQ is 79, 90, or above, standard scores on the Wide Range Achievement Test (WRAT) typically will fall around the same level as the IQ, if the individual does not have FASD. The same correlation applies to other functional abilities as well, including adaptive functioning (e.g., communication, daily living, social skills), which is typically measured via standardized informant measures such as the Vineland Adaptive Behavior Scale (VABS). Consequently, in individuals without FASD, standard scores for adaptive skills also should resemble IQ.

As can be seen in Exhibit 3, a downward slope regardless of specific FASD diagnosis from IQ to academic achievement and finally to adaptive functioning appears to be characteristic for this population. This downward slope has relevance in the forensic context because IQ scores are so ubiquitous and powerful in terms of how a legal defendant is viewed in court. If a defendant's IQ is average or low average, there is a general expectation on the part of all individuals in the legal context that functional capacity also will be average or low

EXHIBIT 3

Adapted from Streissguth et al. (1996)



average. As Greenspan has eloquently argued in the *Hearn* case, IQ is merely a benchmark and no more:

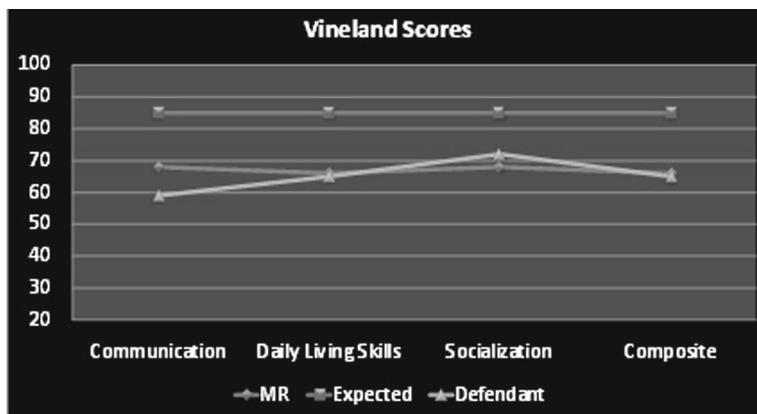
The use of IQ scores (is) an attempt to create an illusion of scientific certainty in identifying a disorder whose causes and manifestations are often hidden and subtle. . . . The problem is that when the artificial number fails to fit with the disability as it is experienced and documented by others, which criterion should be used? Typically, clinicians and government entities find it easier to “go by the book,” but there are times when that results in a wrong and, possibly, unjust decision.

Greenspan further noted that emphasizing IQ score over adaptive functioning in determining “intellectual disability” or “mental retardation” eliminates the need for clinical judgment and essentially reduces the mental health professional’s forensic role to that of a psychometrist.

In other words, it is adaptive ability and not IQ that should determine whether someone is able to meet culturally age-appropriate standards of personal independence and social responsibility. According to the literature (Streissguth et al., 2004), while most individuals with FASD have IQs over 70,

their adaptive abilities as measured by adaptive assessments such as the Vineland tend to fall near or in the intellectually deficient range. In fact, as shown in the chart above, the Adaptive Behavior Composite, which averages the three adaptive subskill scores, is close to 60 for individuals with FAS and slightly below 70 for those with Partial FAS or ARND. In both groups, adaptive functioning tends to fall approximately 20 points below full scale IQ. Bottom line, regardless of IQ, individuals with FASD tend to function as if they were intellectually deficient. The chart in Exhibit 4 below displays this phenomenon using scores from the Vineland to contrast how the defendant in our case example would be expected to perform in terms of adaptive functioning if he didn't have FASD (i.e., adaptive skill standard scores around his IQ score of 85) and how he actually performs compared to individuals diagnosed with mental retardation (MR). As can be seen in this chart, his Adaptive Composite score is almost identical to the MR sample despite his IQ—a performance deficit due in large part to his multiple executive function skills, which control how more basic neurocognitive abilities are used.

EXHIBIT 4
Adaptive functioning of a defendant with FASD compared to mean scores for individuals with mental retardation and those with average IQ



After it has been established through neuropsychological testing that the functional criterion for CNS damage in FASD has been met, the next step in the forensic assessment process is to determine if life course history is consistent with deficits identified in current testing. While school records are a primary source of reliable information for this task, other sources of information (e.g., medical, juvenile justice, adoption, child welfare, treatment, birth mother's records) also may be relevant. If the individual received Special Education services during the school years, school records may be a rich source of standardized test data, with scores that can be interpreted in terms of standard deviations from the mean (the measurement metric used in FASD diagnostic protocols). If the individual is an adult, other records may contain reliable data about behavioral history (e.g., employment, criminal history, Department of Corrections, probation and parole).

Objective life course analysis involves a search for positive as well as negative outcomes. For example, discovering that an individual completed college and maintained a long-term job requiring considerable cognitive skills would likely rule out FASD. On the other hand, a history of employment problems and inability to live independently is consistent with FASD. As in other phases of FASD assessment, life course analysis involves a comparison of the life history with a priori expectations based on consistent secondary disabilities findings by multiple researchers (Löser, Bierstedt, & Blum, 1999; Spohr, Willms, & Steinhausen, 2007; Streissguth et al., 1996). The question at hand is whether a defendant eventually developed the maladaptive coping patterns (i.e., mental illness, substance abuse, disrupted schooling, inappropriate sexual behaviors, trouble with the law, confinement, employment problems, and inability to live independently) predicted in the research. As also seen in the research, risk of these secondary disabilities diminishes if the defendant was exposed to protective factors (e.g., FASD diagnosis in early child-

hood, developmental disabilities services, and nurturing and protective caregiving through most of childhood).

Functional FASD assessment also involves differential diagnosis. For the neuropsychologist, competing etiologies for any functional deficits found in testing must be addressed and explained. This could include head injuries or chronic substance abuse. For the specialist who conducts the lifelong functional assessment, differential diagnosis should address conduct and personality disorders or any other mental health disorder with symptoms that overlap FASD. For instance, antisocial personality disorder is an adult disorder defined in the DSM-IV-TR by a “pervasive pattern” since age 15 of disregarding and violating the rights of others by means of three or more of the following behaviors: failure to conform to social norms with respect to lawful behaviors as indicated by repeatedly performing illegal acts; deceitfulness; impulsivity; irritability and aggressiveness; reckless disregard for safety of self or others; consistent irresponsibility, as indicated by repeated failure to sustain consistent work behavior or honor financial obligations; and lack of remorse. Of course, since many of these behaviors also are seen in neurocognitively impaired individuals with FASD, differential diagnosis can be challenging. In particular, it is important in FASD assessment to assess exposure to traumatic environmental events such as neglect and abuse as well as neurocognitive impairments since interactions between these impairments and social experiences can create an antisocial orientation. Neurocognitive impairments diminish a child’s ability to cope adequately with traumatic experiences, thereby leading to maladaptive behavior patterns. This situation has been described in the FASD literature as “double jeopardy” (Carmichael-Olson, Oti, Gelo, & Beck, 1999).

Along with life course analysis, case referral also may involve testing of abilities directly relevant to the legal context. For example, since many individuals with FASD tend to be suggestible (Pollard et al., 2004), assessment of this trait

with the Gudjonsson Suggestibility Scale (Gudjonsson, 1997) is important. Likewise, many persons with FASD claim to understand and then waive their rights to silence when arrested even though they may have difficulty understanding some of the abstract terms and implications in the Miranda waiver. The Grisso Miranda tests (Grisso, 1998) assess rights waiver competency. If a suggestible person with FASD is interrogated, there is risk of inaccurate statements, including false confession (Fast, Conry, & Loock, 1999; Moore & Green, 2004). Thus, competency to proceed also may be an issue, which should include standardized assessment with an appropriate measure. Measures involving forced-choice test formats may be insufficient because they limit ability to develop a rich understanding of a defendant's functional competence.

If personality testing is done, interpretations should be offered with the caveat that there are no current measures which include persons with FASD in their development samples, which makes interpretation of test results potentially misleading. The same caveat applies to actuarial assessment to determine risk of future violence, including sexual violence. Malingering tests should be administered as part of a competency test battery. Depending upon the nature of the alleged offense, risk of future dangerousness also may be important. In addition to any standardized measures that might be used to measure risk of aggression, it will be important to examine how violence prone a defendant has been over the course of his or her life, especially in high stress contexts. Of course, given that persons with FASD tend to function best in structured settings, this factor should be taken into consideration during risk analysis.

Once members of the multidisciplinary team have assessed the defendant and provided their findings to the team, the medical diagnostician's responsibility is to review medical records and conduct a thorough medical assessment. Physical examination of the face is necessary in order to determine if there are abnormalities. Facial assessment also may include

computerized facial analysis using software developed by Astley and Clarren (1996). Growth deficits may be observable at the time of the assessment. If not, review of medical records may establish deficits in childhood. Physical examination also is important in differential diagnosis in order to rule out competing etiologies. The team's diagnostician may want to refer the defendant for structural brain imaging as well. While brain imaging is not necessary for diagnosis, graphic depiction of damage to a specific brain structure can sometimes be helpful in illustrating the impact of FASD within the courtroom setting.

Finally, after an FASD diagnosis has been made, a team member with forensic expertise should conduct an analysis of the alleged offense behavior and offense history to determine if there are any inconsistencies with the diagnosis. For example, sophisticated planning (particularly with regard to elaborate escape plans) would be inconsistent with FASD. On the other hand, certain offense behaviors are often seen in this population and therefore consistent with FASD (Streissguth et al., 2004). These offenses include:

- running away
- shoplifting/theft (often involving items of little value)
- burglary
- drug offenses
- property damage
- vehicular crimes
- domestic violence
- assault
- illegal sexual behavior
- probation/parole violations

Post-arrest behaviors consistent with FASD include:

- rights waiver after initial denial of culpability and subsequent "over" confession (i.e., providing more information during interrogation than is typical)

- naivete and gullibility
- immaturity
- stubbornness (e.g., clinging to foolish decisions that are not in the defendant's best interest and consistently refusing to agree with defense team suggestions and advice)
- grandiose posturing (e.g., bragging about offense behavior and/or abilities even when such statements are self-sabotaging)
- magical thinking (e.g., believing that something or someone will suddenly make the legal problem go away)
- unquestioning faith in defense attorney's ability to obtain the best outcome (e.g., failure to ask any questions)
- inability to appreciate the impact of the alleged offense either on the victim or on himself/herself (e.g., unemotional or "flat" response to situation)
- inability to provide a coherent, sequential narrative
- memory deficits (e.g., forgetting important defense-related information from interview to interview, inability to recall many offense-related details)

Testimony

Explaining a complicated diagnosis like FASD to the Court requires PowerPoint-rich testimony, with many visual slides to illustrate points being made. At a minimum, two experts should testify regardless of the size of the diagnostic team: one to explain the diagnosis, and another to explain how the diagnosis impacted life history, including the instant offense. Order of testimonial presentation is important. For example, the medical doctor should explain the diagnosis prior to another expert explaining why the diagnosis is relevant to offense conduct. Not only can the diagnostician explain FASD science to the Court, which lays the groundwork for testimony regarding how the defendant meets diagnostic criteria, he or she also can integrate functional findings from other team members. The latter prepares the Court for the nexus testimony: how the FASD impacted the offense conduct. It is very

important for the expert who addresses the nexus to have forensic expertise. Beyond communicating the diagnosis and why it matters to offense conduct, testimonial goals also might include: (a) explaining why standardized assessment trumps subjective analysis in terms of reliability, (b) pointing out areas of convergent validity (i.e., consistency over time among tests and test examiners and consistency among informants), (c) describing indices that portray neurocognitive profiles in FASD (e.g., downward slope, secondary disabilities), (d) integrating standardized test results with behavioral information across the defendant's lifespan (drawing parallels between test deficits and actual behavior), and if appropriate, (e) explaining how FASD affects future dangerousness.

If the results of the FASD assessment will be used in plea negotiation or contested competency hearings, then it will be important in the functional reports to address how specific deficits affected behavior directly relevant to these issues as well as to mental state. For instance, did attention deficits and impulsivity compound the defendant's self-regulation difficulty to such an extent that he or she was unable to resist an urge to act? Did such deficits worsen a tendency to make hasty decisions, such as consenting to rights waiver without adequate understanding? Do memory deficits as well as poor sequencing ability preclude ability to provide relevant exculpatory details to the defense attorney? Do communication deficits affect understanding and ability to communicate adequately in terms of Miranda rights, police interrogation, and the legal process? Do executive function deficits affect abilities to learn from experience, to engage in the abstract thinking required to generalize from previous experiences to the present while simultaneously foreseeing consequences of actions (i.e., aspects of "reflection"), and to make independent decisions, delay gratification, consider alternatives, appreciate the impact of one's behavior on self and others, resist others' efforts to lead and manipulate, control emotions and impulses, and show remorse?

In summary, FASD assessment is complex and challenging, even in the clinical context. In the forensic context, these complexities only increase. However, with each member of a multidisciplinary team working as part of the ensemble to handle discrete aspects of the assessment process, the end result can be a rich analysis of a defendant's functional capacities and how those capacities influenced pre-assessment events (i.e., offense conduct and rights waiver) and are likely to affect future conduct (e.g., competency to proceed to trial and future risk of dangerousness). The end result in Court is a thorough understanding of the defendant's capacity to behave, which can only enhance the legal process.

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APPENDIX A

FASD EXPERTS SCREENING QUESTIONNAIRE

✓

Offense Conduct

- Impulsive and illogical actions with high risk of detection
- “Simple” offense plan (focus is only on the objective)
- Poor exit strategy
- Aggressive over-reaction to unforeseen events (“fight or flight”)
- More sophisticated/experienced co-defendants

Arrest Conduct

- Immediately or easily waives rights
- Over-confesses (suggestible)
- Brags about prowess or takes full responsibility if co-defendants
- Emotionally detached from crime (shows little remorse or guilt)
- Behavioral regression (breaks down in tears, infantile behavior)

Interview with Client

- Short stature (not always)
- Unstable lifestyle
- Socially inept, immature, and naïve
- Eager to please or stubbornly resists the obvious
- Can’t provide coherent, detailed narrative
- Can’t concentrate
- Doesn’t add much to discussion
- Doesn’t seem to remember what you tell him/her from appointment to appointment

Prior Legal History

- Easily led by more sophisticated peers
- Multiple low-grade offenses in teen years, often with co-defendants
- Lots of stealing
- Illogical offenses (e.g., stealing something with little value)
- Oblivious to risk
- Impulsive, opportunistic crimes
- Probation violations

Life History

- Mom abuses alcohol/drugs
- Involvement with child welfare
- Adoption/foster or relative placements/juvenile commitment
- Special Education / learning disabilities in school
- Mental health diagnoses in childhood (especially ADD/ADHD)
- Anger control problem
- Rule-breaking behaviors in childhood (lying, cheating, stealing, fighting)
- Disrupted education
- Substance abuse
- Poor understanding of personal boundaries
- Difficulty living independently
- Poor employment history