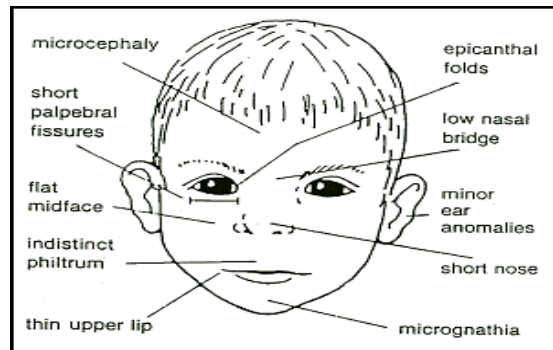


## Fetal Alcohol Syndrome Disorders (FASD)

**Fetal Alcohol Syndrome Disorders:** The umbrella term used to describe the range of outcomes and disabilities apparent in individuals that have been exposed to alcohol prenatally. These terms include Fetal Alcohol Syndrome (FAS), Partial Fetal Alcohol Syndrome (pFAS) and Alcohol-Related Neurodevelopmental Disorder (ARND).

**The full syndrome of FAS includes all of the following:**

- *facial dysmorphia:* A pattern of facial characteristics that include a smooth philtrum (vertical ridge between nose and upper lip), thin upper lips and small eyes



- *central nervous system damage:* Small head circumference, neurological problems and delays in a variety of different areas
- *growth deficiency:* Low birth weight, height and/or weight below the 5<sup>th</sup> percentile
- *cognitive/developmental delays:* Huge range in terms of cognitive abilities. Even individuals with average cognitive scores may still have deficits in the area of executive functioning (e.g. planning, sequencing, concept formation). Some children also have learning disabilities.
- *behavioural/emotional problems:* Adaptive behaviour deficits include organizational difficulties, understanding basic routines and safety, following multi-step instructions and remembering information. Other behavioural problems include aggression, inappropriate sexual behaviour, difficulties understanding the consequences of their behaviour (cause and effect), lying and stealing. A very high proportion of these individuals also have mental health issues (B.C. Ministry of Education, 2011).

**Terminology:** There are a variety of different terms used to describe the range of deficits in this population since many individuals do not meet the full criteria for FAS (Green, 2007).

- **Partial FAS:** Confirmation of maternal exposure to alcohol prenatally, some evidence of facial features, and at least one of the following:
  - growth deficiency
  - CNS neurodevelopmental abnormalities
  - complex pattern of cognitive and behavioural delays
- **ARND:** Confirmation of maternal exposure to alcohol prenatally, do not have the facial features or growth delays, but also has one of the following:
  - CNS abnormalities
  - complex pattern of cognitive and behavioural delays
  - The brain damage and associated problems maybe just as extensive as in FAS.

**Other associated terms:**

- **Static Encephalopathy:** Permanent or unchanging brain damage.

**Other possible developmental delays/concerns:**

- *Communication/Social skills deficits:* While they may have strengths in verbal fluency and vocabulary, they often have problems using language to solve social problems and understanding abstract aspects of language. They may experience huge social communication problems due to poor language comprehension and pragmatic difficulties (Green, 2007).
- *Motor Skills:* Delayed fine and gross motor development. Poor muscle tone. They may have difficulties writing, tying shoelaces and running (Johnson, Tamboline, Williams & Wright, 1997).
- *Sensory concerns:* They sometimes have issues with sensory modulation dysfunction. This is when an individual is either highly over or under-responsive to sensory input from their body or the environment. Individuals may have sensory issues in the areas of tactile, vestibular, proprioceptive, visual, auditory, olfactory, and gustatory (Atchison, 2007).

**Assessment referral/networks:**

The referral process for a multi-disciplinary assessment differs from region to region. While some assessment networks accept referrals from a Family Physician, Pediatrician, or a Nurse Specialist Practitioner, other regions need referrals from a Pediatrician or Psychiatrist only (British Columbia Ministry of Education, 2011):

- *Sunny Hill Health Centre for Children, Vancouver, B.C.*
- *Northern Health Authority, Prince George, B.C.*
- *Interior Health Authority, Kelowna, B.C.*
- *Vancouver Island Health Assessment Network, Victoria, B.C.*
- *Asante Centre, Maple Ridge, B.C.*

**Possible assessment approaches/review for children:**

**1. Wechsler Intelligence Scale for Children, Third Edition (WISC-111):** One of the best cognitive tests for children. Minor difficulties in administration, scoring and the amount of time it takes to do the test. It varies from 50-70 to 80-90 minutes to complete (Braden, 1995) **or**

**Wechsler Pre-School and Primary Scale of Intelligence, Revised (WPPSI-R):** One of the best cognitive tests for children approximately aged from 3 to 7 years old. Good manual. Minor concerns include lack of data in a few areas including little treatment validity information (Bracken, 1993) I believe the updated third edition of this test may be difficult for FASD students to use because many of the visual-spatial scales have been taken out and have been replaced with fluid reasoning subscales (Madle, 2005) **or**

**Stanford-Binet Intelligence Scale, Fifth Edition (SB5):** One of the best norm-referenced, cognitive tests for individuals aged 2 to 85. It has good reliability, adequate validity and the working memory scale with help identify students with learning problems. The emphasis on non-verbal intelligence should be beneficial to individuals with FASD. The only limitations are that the interpretive manual is not included with test materials and no evidence-based interventions are recommended (Johnson, 2005).

**2. Wide Range Assessment of Memory and Learning, Second Edition (WRAML2):** This is a well-normed, psychometrically sound tool for measuring memory from the age of 5 to 90. It is a reliable screening tool for memory. It includes assessments of working memory, delayed recall and recognition memory (Dunn, 2005). **or**

Memory Scales of the **Stanford-Binet Intelligence Scale, Fifth Edition**: It has a working memory scales, such as the non-verbal working memory subscale and the verbal working memory scale. I believe it is crucial to differentiate these two types of working memory for individuals with FASD (Johnson, 2005).

**3. Peabody Picture Vocabulary Test, Fourth Edition (PPVT4)**: An excellent test designed to assess the receptive language skills of children and adults from the ages of 2.5 to over 90. Good utility with very young kids and children with special needs (Kush, 2009).

**4. Developmental Test of Visual Motor Integration, Fourth Edition (VMI)**: A test used as a screening tool for children aged 3-17 to test their visual-motor integration skills (visual-motor integration is 'the degree to which visual perception and finger-hand movements are well coordinated'). It has a standardized administration procedure, adequate norms and good psychometric properties (Visser, 2001).

**5. Wechsler Individual Achievement Test, Third Edition (WIAT-111)**: A diagnostic achievement test for individuals approximately aged 4 through 10 years old. Good psychometric properties, identifies academic strengths and weaknesses, can assist in decision-making regarding services and diagnosis of specific learning disabilities. Only issues of concern are intervention recommendations are not research-based as well as differences regarding race/ethnicity and gender (Miller, 2009).

**6. Vineland Adaptive Behaviour Scale, Second Edition (Vineland-11)**: An excellent test of adaptive behaviour in the areas of communication, daily living skills and socialization for individuals aged 0-90. It is user friendly, easy to score and is good at determining if a child has severe cognitive deficits or other developmental disabilities. The strengths of this test include excellent reliability and sufficient validity. The main criticism is there is weak inter-rater reliability due to the fact it is based on interview forms and therefore solely based on third parties opinions (Stein, 2009).

#### **How FASD is best addressed:**

##### **A Collaborate Team Approach (student, classroom, family and school level):**

- It is beneficial for the home, school and outside agencies supports to meet on a scheduled basis. The behavioural and emotional concerns of this population are not easily understood and it is important for team members to share their knowledge. It can often be frustrating when these students do not act or respond like “typical” children.
- Parents can provide information on strategies that work for them, teachers and other school staff can contribute valuable information regarding their observations and the child’s learning, and other outside professionals (e.g. medical professionals, FASD Keyworkers, etc.) could provide information on the medical aspects or further information on this disorder (Lasser, 1999).

##### **Prevention Strategies:**

- Healthcare providers should recognize their role in providing education to woman of child-bearing age of the potential risks of drinking alcohol.
- Provide educational opportunities for FASD training including familiarity with courses offered at different institutions or the possibility of online FASD courses.

- The use of preferred strategies for educating individuals such as online resources that link to valuable resources, current research articles and the possibility of guest speakers well-versed in this subject area is vital. Since this is new research we have yet to determine whether these strategies work, but it seems like it would be a logical starting point (Brems, Boschma-Wynn, Dewane, Edwards, & Robinson, 2011).

### **Classroom Intervention Strategies**

- Develop an Individual Educational Plan (IEP) to work on areas of strength and weakness

### **Cognitive Strategies:**

- Ensure that a comprehensive academic and cognitive assessment is conducted
- Keep in mind that while the child may have good long-term memory, they may have forgotten what happened that morning due to problems with short-term memory
- Concepts learned one day maybe forgotten the next day (frequent concept reinforcement)
- Pictures, diagrams, manipulatives, direct instruction with modeling, constant feedback and practice with a variety of examples assists with learning abstract concepts
- Other learning strategies include organizational tools, mneumonics and concept mapping (Miller, 2006)
- Use arrows to indicate direction in reading, dot in the top left corner to show where to start reading and use a ruler under each line that must be read (B.C. Ministry of Education, 2011)

### **Behaviour/Emotional Problems:**

- Use of detailed visual schedules can assist with following classroom routines
- Focus on predictability including avoidance of multiple teachers, rehearsal of special events, provide transition time between activities and reduce the amount of changes in the day
- Environmental modifications may include study carrels, headphones to reduce distractions and keep the child's desk away from busy areas (doorways)
- Behavioural interventions should focus on teaching new skills such as visual presentations of rules to cue appropriate behaviour
- Target a limited number of key behaviours and give positive reinforcement for appropriate behaviour. Initially, feedback should be immediate (e.g. 1 minute time increments)
- If consequences are given for negative behaviour, environmental changes should be considered first to help facilitate the appropriate behaviour. The consequence should be administered immediately if it is deemed necessary (e.g. short time-out)
- Difficulties with understanding cause and effect can be addressed through pictures and stories
- Focus on Positive Behavioural Support (PBS) programming, general strategies for children with ADHD, anger management skills and self-talk (Green, 2007; B.C. Ministry of Education, 2011).

### **Communication/Social Skills:**

- Be precise and concise in your instructions
- Provide instructions one at a time and repeat if necessary
- Avoid using "why" questions, figures of speech or sarcasm
- It is important to teach them others' perspectives, gestures and facial expressions
- Direct instruction of social skills is necessary
- Seek assistance from a speech language pathologist if necessary (Miller, 2006; B.C. Ministry of Education, 2011; Johnson, et. al., 1997)

### **Motor Skills:**

- Reduce the amount of copying or supply child with a photocopy of notes
- Give the student extra time for written activities, but keep in mind they still may not be able to complete the task
- Encourage early keyboarding skills
- Active participation in physical activities will improve their coordination

- Consult with a physiotherapist or occupational therapist to assist with fine and gross motor skills (Johnson et. al., 1997)

### **Sensory Issues:**

- It is important to design a classroom that is calm, quiet and de-cluttered (e.g. reduce items hanging from the ceiling, posters on the wall, cover bookshelves temporarily with blankets)
- Investigate if a sensory profile rating scale is available to detect any possible sensory issues
- A safe, comfortable place the student can go to when they are overwhelmed by sensory stimulation (bean bag cushion underneath a table).
- Determine if it is necessary to get an occupational therapist involved to make recommendations (Atchison, 2007).

### **Empirical Support for Intervention Strategies:**

- There is limited research on the efficacy of the intervention strategies used with children with FASD. However, current research in this field demonstrates that this will hopefully change in the future (Bohjanen, Humphrey and Ryan, 2009).

### **Useful Resources:**

- **Website:** [www.fasdoutreach.ca](http://www.fasdoutreach.ca): This is a website for the Provincial Outreach for Fetal Alcohol Spectrum Disorder (POPFASD) and provides information on the effects of FASD on student behaviour and learning.
- **Website:** <http://www.bced.gov.bc.ca/specialed/awareness/53.htm>: This links to a four page handout from the B.C. Ministry of Education on FASD. It is very useful to teachers and includes information on recognizing a child with FASD, classroom strategies and community contacts.
- **Book:** *Challenge and Opportunities: A Handbook for Teachers of Students with Special Needs with a focus on Fetal Alcohol Syndrome and partial Fetal Alcohol Syndrome* (1999). By the Vancouver School Board.
- **Book:** *Teaching Students with Fetal Alcohol Syndromes/Effects: A Resource Guide for Teachers* (1997). By Bryan Johnson, Ann Tamboline, Lorna Williams and Laurie Wright.
- **Book:** *Fantastic Antone Succeeds: Experiences in Educating Children with Fetal Alcohol Syndrome* (1993). By Judith Kleinfeld.
- **Journal Article:** Green, J. H. (2007). Fetal alcohol spectrum disorders: Understanding the effects of prenatal alcohol exposure and supporting students. *Journal of School Health*, 77, 103-108.
- **Journal Article:** Miller, D. (2006). Students with fetal alcohol syndrome: Updating our knowledge, improving their programs. *Council for Exceptional Children*, 38, 12-18.
- **Community Resources:** FASD Keyworkers provide information to families who have a child with a diagnosis or suspected diagnosis of FASD or other Complex Behavioural Disorders. A list of FASD Keyworkers in the Lower Mainland can be accessed at [http://www.sourcesbc.ca/index.php?option=com\\_content&view=article&id=87&Itemid=96](http://www.sourcesbc.ca/index.php?option=com_content&view=article&id=87&Itemid=96)

## References

- Atchison, B.J. (2007). Sensory modulation disorders among children with a history of trauma: A frame of reference for speech-language pathologists. *Language, Speech, & Hearing Services in Schools, 38*, 109-116.
- Bohanjen, S., Humphrey, M., & Ryan, S.M. (2009). Left behind: Lack of research-based interventions for children and youth with fetal alcohol spectrum disorders. *Rural Special Education Quarterly, 28*, 32-38.
- Bracken, B.A. (1993). Review of the Pre-School and Primary Scale of Intelligence, Revised. *Mental Measurements Yearbook Database, 11*. Memphis State University, Memphis, TN.
- Braden, J.P. (1995). Review of the Wechsler Intelligence Scales for Children (3<sup>rd</sup> ed.). *Mental Measurements Yearbook Database, 12*. University of Wisconsin-Madison, Madison, WI.
- Brems, C., Boschma-Wynn, R.V., Dewane, S.L., Edwards, A., & Robinson, R.V. (2011). Prevention of fetal alcohol syndrome spectrum disorders: Educational needs in academia. *Journal of Alcohol & Drug Education, 55*, 15-37.
- British Columbia Ministry of Education (2011). *The Provincial Outreach Program for Fetal Alcohol Spectrum Disorder*. Retrieved from <http://www.fasdoutreach.ca/>
- British Columbia Ministry of Education (
- Cronbach, L.J. (1989). Review of the Stanford-Binet Intelligence Scale (4<sup>th</sup> ed.). *Mental Measurements Yearbook Database, 10*. Stanford University, Stanford, CA.
- Dunn, T.M. (2005). Review of the Wide Range Assessment of Memory and Learning (2<sup>nd</sup> ed.). *Mental Measurements Yearbook Database, 16*. University of Northern Colorado, Greeley, CO.
- Green, J.H. (2007). Fetal alcohol spectrum disorders: Understanding the effects of prenatal alcohol exposure and supporting students. *Journal of School Health, 77*, 103-108.
- Johnson, B., Tamboline, A., Williams, L., & Wright, L. (1997). *Teaching students with fetal alcohol syndrome/effects: A resource guide for teachers*. Victoria, B.C.: Queen's Printer for British Columbia.
- Johnson, J.A. (2005). Review of the Stanford-Binet Intelligence Scale (5<sup>th</sup> ed.). *Mental Measurements Yearbook Database, 16*. University of Northern Colorado, Greeley, CO.
- Kush, J.C. (2009). Review of the Peabody Picture Vocabulary Test (4<sup>th</sup> ed.). *Mental Measurements Yearbook Database, 18*. Duquesne University, Pittsburgh, PA.
- Lasser, P. (1999). *Challenges and opportunities: A handbook for teachers of students with special needs with a focus on fetal alcohol syndrome (FAS) and partial fetal alcohol syndrome (pFAS)*. Vancouver, B.C.: Vancouver School Board Publications.

- Madle, R. A. (2005). Review of the Wechsler Pre-School and Primary Scale of Intelligence (3<sup>rd</sup> ed.). *Mental Measurements Yearbook Database, 16*. The Pennsylvania State University, University Park, PA.
- Miller, D. (2006). Students with fetal alcohol syndrome: Updating our knowledge, improving their programs. *TEACHING Exceptional Children, 38*, 12-18.
- Miller, D. (2009). Review of Wechsler Individual Achievement Test (3<sup>rd</sup> ed.). *Mental Measurements Yearbook Database, 18*. University of Florida, Gainesville, FL.
- Stein, S. (2009). Review of the Vineland Adaptive Behaviour Scale (2<sup>nd</sup> ed.). *Mental Measurements Yearbook Database, 18*. Central Washington University, Ellensburg, WA.
- Visser, J. (2001). Review of the Development Test of Visual-Motor Integration (4<sup>th</sup> ed.) Revised. *Mental Measurements Yearbook Database, 14*. Pennsylvania State University, State College, PA.