



Extent and Impact on Child Development

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IHE Consensus Development Conference on

**Fetal Alcohol Spectrum Disorder
(FASD) – Across the Lifespan**

October 7 to 9, 2009, The Westin Edmonton, Edmonton, Alberta



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Extent and Impact on Child Development: Of What?

- Prenatal Alcohol Exposure?
- FASD?
- Cumulative Risk Factors?
- Resilience/Adaptation Promoting Factors?
- Prevention . . . Intervention?



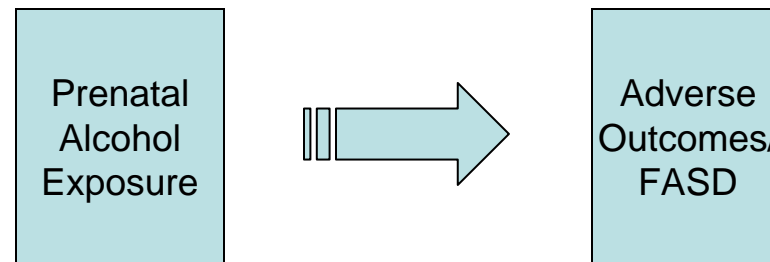
Outline

- Models of Risk, Resilience and Outcome
 - Issues of Attribution
- Core Principles of Child Development
- Possible Deficits in FASD Populations
- Possible Trajectories
- Need for an Individualized Approach
- Policy Implications



Models of Risk, Resilience and Outcome

- Frame attribution, trajectories and prognosis
- Guide prevention and intervention
- Linear Causality Models:



- But is FASD the Only Lens for Understanding Outcome?

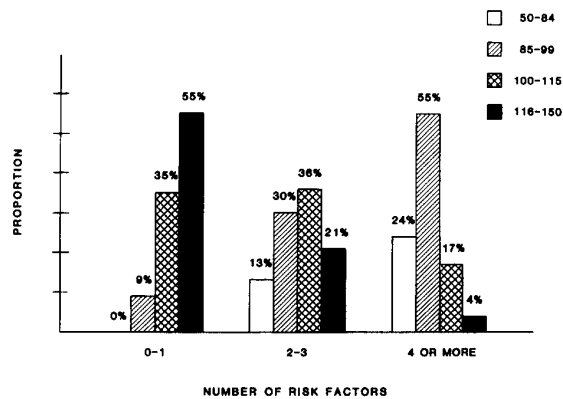


Models of Risk, Resilience and Outcome

- Fetal Programming of Adult Disease
 - A stimulus/insult at a critical period of development has lifelong effects
- Cumulative Risk
 - Total number of risk exposures predicts maladaptation, regardless of the specific individual risks
- Developmental Psychopathology
 - Development occurs from the dynamic transaction between biologic, behavioral, psychological, and broader system/contextual variables



Cumulative Environmental Risk: Verbal IQ in 4-year-old Children



- Parental Mental Health
- Parenting Style
- Maternal Education
- SES Variables
- Family Social Support
- Stressful Life Events

- No single factor uniquely enhanced or limited early IQ
- Combinations and multiple risk factors needed to jeopardize child IQ

Sameroff, 1987

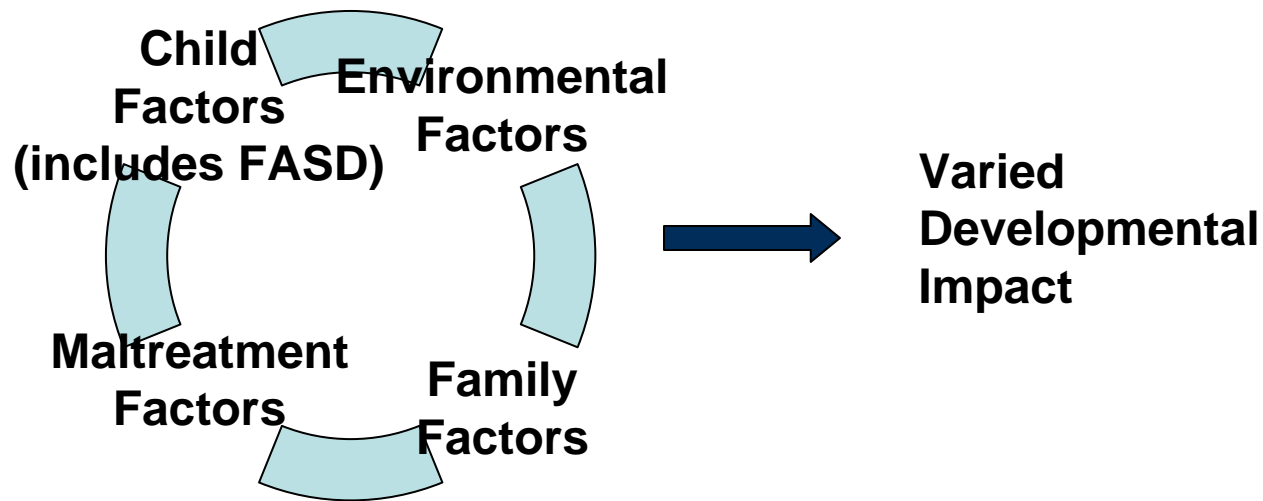


Cumulative Prenatal Substance Exposure and Environmental Risk: Child Development

- Carta et al, 2001
 - Overlapping cohort; N=278; serial assessment over 54 mo. developmental ability
 - Environmental risk accounted for more variance (9-11%) in developmental outcome/trajectory than prenatal drug and/or alcohol exposure (3-4%)
 - Widening gap in trajectory regardless of exposure over time
 - Children with higher levels of substance exposure were not more affected by environmental exposure than children without prenatal exposure



Developmental Psychopathology: A Transactional Model



*Pearce JW, Pezzot-Pearce TD, 2007
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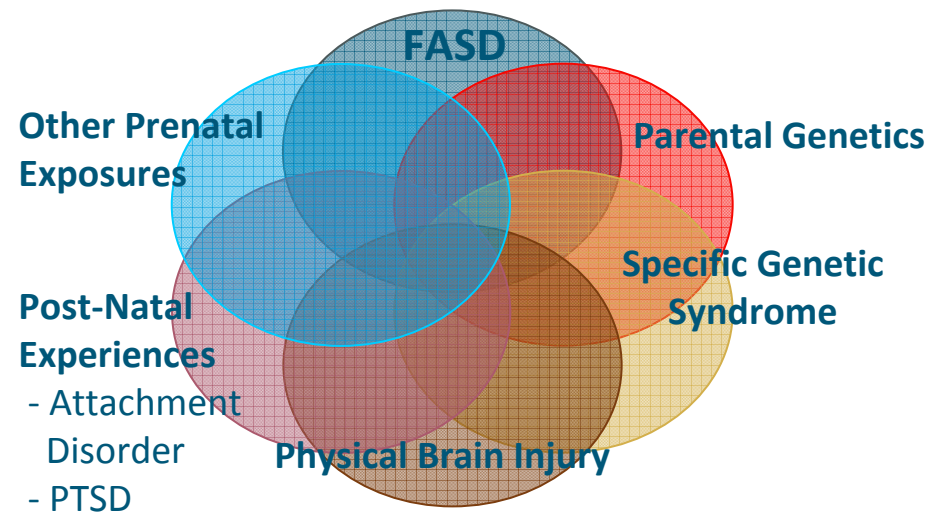


Attribution

- Attribution:
 - to explain by indicating a cause
 - Issues of misattribution in the field of FASD



Attribution: A Complex Neurodevelopmental Disorder



Alberta FASD Diagnostic Clinic Data: Cumulative Risk (N=52) unpublished data

- Tobacco: 89%
- Marijuana: 50%
- Any Street Drugs: 27%
- Any Maltreatment: 67%
 - Neglect: 56%
 - Physical Abuse: 37%
 - Sexual Abuse: 33%
- Witness to Domestic Violence: 33%
- Multiple/Disruptive Caregivers: 69% (Ave # = 5)



Principles of Child Development

- Children are normal until proven otherwise
 - Normal variation - maturational delay - transient disorders - persistent impairment
- Characterized by continuities, discontinuities and transitions
- Dynamic and continuous interaction between biology and experience, and sources of vulnerability and resilience
- An interdependent process: domains influences each another
- Early experiences are important but risk and protective factors are influential into adulthood
- Trajectories can be altered by interventions that change the balance between risk and protection/promotion

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Models of Assessment

- Neurologic Processes
- Neuropsychology
- Developmental Pediatrics
- Brain Injury/Pediatric Rehabilitation
- Strength-Based
- **What is the purpose of assessment?**
- **What model is used in the field of FASD?**



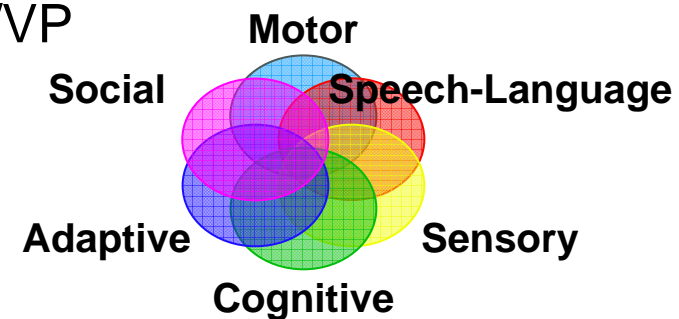
Potential Deficits: Canadian Guidelines

- A range of cognitive and behavioural outcomes
- No modal profile of abilities is unique to alcohol exposure
- No profile can be distinguished from that observed with other neurobehavioural disorders
- Not every deficit identified in a child with prenatal exposure to alcohol may be solely the result of alcohol exposure
- There is a lack of expert consensus on core deficits
- Features of FASD are complex and multifaceted, originating with organic brain damage caused by alcohol, but interacting with genetic and other influences
- Over the lifespan of the affected person, these features may be exacerbated or mitigated by environmental experiences



Possible Functional Deficits

- Intelligence: Verbal and Non-Verbal etc.
- Academic Achievement (esp. Mathematics)
- Communication: Core/Higher-Order/Pragmatic
- Executive Functioning/ADHD
- Memory
- Motor: GM/FM/Planning//VMI/VP
- Sensory Processing
- Adaptive Skills
- Maladaptive Behavior
- Mental Health Disorders



Is there a Behavioral Phenotype or Neuropsychological Profile?

- One profile versus several (Gray, Mukkherjee and Rutter, 2008)
- Difficulties with math and aspects of attention (Jacobson and Jacobson, 2002)
- Impairment in complex information processing and integration (Kodituwakku, 2007; Aragon et al, 2008; Kodituwakku, 2009)



Is there a Behavioral Phenotype or Neuropsychological Profile?

- “A neuropsychological phenotype has not been defined” (Aragon, 2008)
- Considerable variability in neuropsychological impairment was noted between FASD subgroups and within each subgroup following detailed neuropsychological testing (Astley et al, 2009)

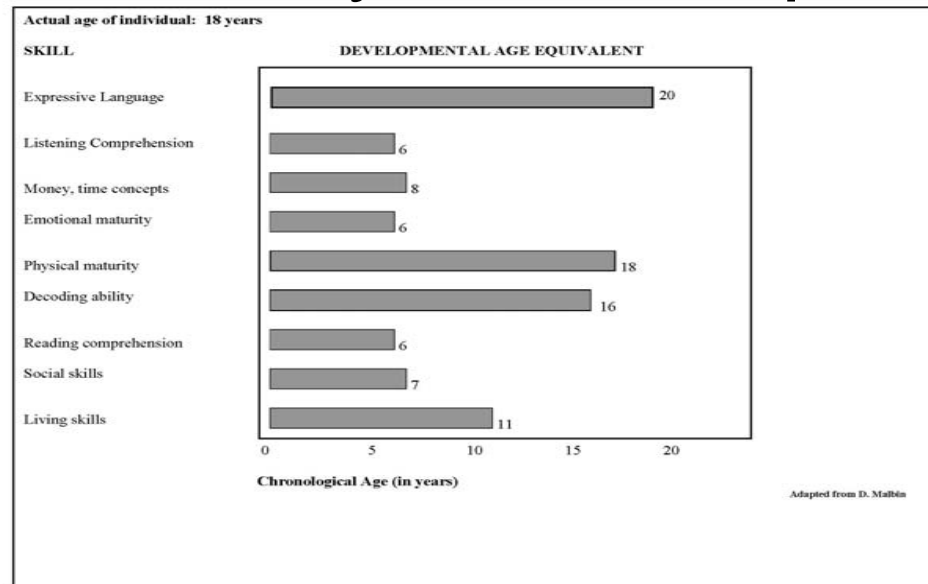


Possible Trajectories

- Attachment/Experience → Poor Social Skills
- Regulation → Externalizing Behaviors
- Developmental Delay → Functional Deficit
- Cognitive Skills → Stable?
- Worsening Adaptation?
- Unmet Development of Higher-Order Skills
- Mental Health Disorders



Possible Trajectories: Discontinuity in Development



Summary: Impact and Extent

- No unique developmental or psychiatric disorders in children with FASD
- Confounded by overlapping risks for outcome
- Research to date limited by:
 - Few studies
 - Mix of “FASD” versus “alcohol exposure”
 - Use of standardized instruments
 - Methodology: comparison groups/community samples



An Individualized Approach

- An individual difference approach to assessment and intervention is needed
- Minimize incorrect assumptions about ability and limitation based on etiology
 - “These Kids”
- Each child has a unique profile to tailor intervention:
 - Particular biologic strengths and challenges
 - Developmental levels
 - Family patterns

Greenspan and Wieder, 1998



Policy Recommendations

- Prospective cohort research examining cumulative risk and adaptation variables including intervention for the Canadian context
- Should not distract from research and policy related to:
 - Comprehensive screening and surveillance for all children and adolescents linked to timely assessment and intervention
 - Intervention research for functional deficits for all children regardless of etiologic diagnosis



Policy Recommendations

- Learn from existing deficit and intervention literature in developmental disorders and pediatric rehabilitation
- Implement treatment informing diagnostic approaches to chart individual patterns of ability and disability and underlying risk and adaptation promoting factors
- Learn from innovative programs which appreciate the effects of cumulative risk and which emphasize collaboration across child serving sectors – e.g. “Pediatrics for Kids in Care (P-KIC)



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