Delineating polysubstance abuse from Alcohol use in Fetal Alcohol Spectrum Disorders: 2018 Data from the UK national specialist clinic

Zameer Mohamed, Alexandra C. S. Carlisle & Alexandra C. Livesey, Raja A. S. Mukherjee
Declaration of interest related to FASD

Payments received directly only from main NHS employer
Volunteer medical advisor various FASD charities
Grant coapplicant for 2 current research projects.

No conflict of interests for this talk
Why important

- Alcohol established teratogen
- Animal studies can delineate
  - Limited as not necessarily always representative of primate models
- Humans often take more than one thing at a time
- Studying these issues in Human samples challenging
- DSM-V requires the exclusion of other factors that could explain the presentation
What do we know

- Alcohol has strong effects
- Others effects differ
- Evidence is limited however and continues to grow
- Need to balance biological plausibility as well as observable findings

Behnke et al 2013 (Paediatrics)
What we know cont. looking at more details

- Cannabis (Fried 1998)
  - WISC III: Block design and picture completion most affected by cannabis
  - Visual scanning and hypothesis testing more affected in exec function tests

- Other drugs less well established and delineated
What we did

- Need to differentiate the unique profile of FASD
- Research samples can be limited though ethical considerations
- Naturally occurring differences and natural experiments may offer a way to study this
- Such samples exist in clinical samples but also have inherent biases

For a better life
Measures used in the clinic

- 4 Digit FASD analysis
- (3d Facial recognition)
- Semi structured FASD history Questionnaire
- SCQ
- DISCO
- ADHD Screening Questionnaire
- DBCL parent and teacher
- Vineland II
- Communication Checklist for Children/Adults
- Short Sensory Profile
- WAIS IV / WISC IV/ WISC V
- Delis Kaplan Executive Function Tests
- BRIEF parent and teacher
- CELF 4 (3 intially)
- TROG
- Social Interpretation cards
- PSI
- Child Connors Parent and teacher
- SRS
Clinic pathway

Day 1
- FASD overview and photography
- SALT
- Psychology

Day 2
- Total face to face: 12 hrs
- Indirect evaluation: 9 hrs

Interim findings
- Wider neurodevelopmental assessment
- Wider evaluation all measures and full report
### FASD Diagnosis

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAS</td>
<td>10</td>
</tr>
<tr>
<td>pFAS</td>
<td>19</td>
</tr>
<tr>
<td>ARND</td>
<td>62</td>
</tr>
</tbody>
</table>

![Bar chart showing FAS, pFAS, and ARND diagnoses](chart.png)
Participants were removed from the analysis if there was no alcohol, or only suspected alcohol/substances without relevant confirmation.
Comparisons between means - ANOVA

- Preliminary analysis
- Comparisons of means conducted between means of Prenatal Alcohol Exposure only and Prenatal Polysubstance Abuse groups on:
  - Cognitive Profile (WISC-IV)
  - Vineland
  - Sensory behaviour (Short Sensory Profile)
  - Behavioural and emotional disturbance (Developmental Behaviour Checklist)
Cognitive Profile: Alcohol vs Polysub (n = 65)

<table>
<thead>
<tr>
<th>WISC-IV Index</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Comprehension</td>
<td>.05*</td>
</tr>
<tr>
<td>Perceptual Reasoning</td>
<td>.16</td>
</tr>
<tr>
<td>Working Memory</td>
<td>.02*</td>
</tr>
<tr>
<td>Processing Speed</td>
<td>.23</td>
</tr>
<tr>
<td>Full Scale IQ</td>
<td>.11</td>
</tr>
<tr>
<td>General Ability Index (Overall IQ when FSIQ uninterpretable)</td>
<td>.24</td>
</tr>
</tbody>
</table>

This data suggests Children within the Prenatal Alcohol Only group may have more impacted areas of cognitive weakness compared to the Polysubstance Abuse group.

N.B. For Verbal comprehension Index the Brown Forsythe’s test was used as it violated an assumption.
This data suggests the Polysubstance Abuse group may have more difficulties in tactile sensitivity.

For tactile sensitivity the alcohol only group were classed as ‘probably different’, whilst the polysubstance group were ‘definitely different’ from normal data.
## Vineland

<table>
<thead>
<tr>
<th>Vineland Scale</th>
<th>Average age of function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptive Communication</td>
<td>3 Years 10 Months</td>
</tr>
<tr>
<td>Expressive Communication</td>
<td>5 Years 8 Months</td>
</tr>
<tr>
<td>Written Communication</td>
<td>8 Years 3 Months</td>
</tr>
<tr>
<td>Personal Daily Living</td>
<td>6 Years 9 Months</td>
</tr>
<tr>
<td>Domestic Daily Living</td>
<td>6 Years 10 Months</td>
</tr>
<tr>
<td>Community Daily Living</td>
<td>7 Years 8 Months</td>
</tr>
<tr>
<td>Interpersonal Relationships</td>
<td>4 Years 5 Months</td>
</tr>
<tr>
<td>Play and Leisure</td>
<td>4 Years 6 Months</td>
</tr>
<tr>
<td>Coping Skills</td>
<td>5 Years 1 Month</td>
</tr>
</tbody>
</table>
Vineland

Mean age = 11.93, Median age = 11

Average Age of function

- Receptive Language
- Expressive Language
- Written
- Personal Living
- Domestic Living
- Community Living
- Interpersonal Relations
- Play & Leisure
- Coping

Average Age of function
<table>
<thead>
<tr>
<th>Vineland Scale</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptive Communication</td>
<td>.43</td>
</tr>
<tr>
<td>Expressive Communication</td>
<td>.18</td>
</tr>
<tr>
<td>Written Communication</td>
<td>.81</td>
</tr>
<tr>
<td>Personal Daily Living</td>
<td>.95</td>
</tr>
<tr>
<td>Domestic Daily Living</td>
<td>.99</td>
</tr>
<tr>
<td>Community Daily Living</td>
<td>.38</td>
</tr>
<tr>
<td>Interpersonal Relationships</td>
<td>.19</td>
</tr>
<tr>
<td>Play and Leisure</td>
<td>.42</td>
</tr>
<tr>
<td>Coping Skills</td>
<td>.97</td>
</tr>
<tr>
<td>Communication Standard Score</td>
<td>.09</td>
</tr>
<tr>
<td>Daily Living Standard Score</td>
<td>.06</td>
</tr>
<tr>
<td>Socialization Standard Score</td>
<td>.03*</td>
</tr>
</tbody>
</table>
Limitations

Sample size – alcohol only groups need to be larger so we can further delineate effects of alcohol only on behavioural presentations in FASD

Clinic sample
Conclusions

- It is vital to be able to differentiate.
- Our sample was small but we have begun to show possible differences.
- Need to look in more detail at data but sample size affects the outcomes.
- Shows that this method of using natural experiments can help to delineate these issues.

For a better life
FASD Clinic

Welcome to our Foetal Alcohol Spectrum Disorders clinic

Foetal Alcohol Spectrum Disorders (FASDs) describes a range of effects that can occur in an individual who was exposed to alcohol in the womb.