Neurocognitive Functioning in the Internationally Adopted Child with High Risk FASD Facial Features

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Introduction
Each year more than 23,000 children are internationally adopted (IA) into the United States.¹ A significant issue in some countries actively participating in international adoption is prenatal alcohol exposure.¹ Prenatal alcohol exposure can be associated with brain damage, facial abnormalities and insufficient growth. The severity at which these characteristics present can vary and are therefore grouped into a spectrum called Fetal Alcohol Spectrum Disorder (FASD). FASD is diagnosed by a maternal history of alcohol consumption during pregnancy and presentation of certain characteristics including growth deficiency, central nervous system (CNS) dysfunction, and FASD facial features.²,³,⁴ Since many IA children lack documentation of prenatal alcohol exposure, the only measure of FASD risk is through analysis of facial features. Facial features associated with prenatal alcohol exposure include small palpebral fissures, thin upper lip, and smooth philtrum.²,⁵

Methods
• Fetal Alcohol Syndrome (FAS) photographic software: assesses FASD risk by giving a 4-Digit Facial Rank Score based on face measurements
• Wechsler Intelligence Scale for Children (WISC): estimates Full Scale Intelligence Quotient (FSIQ) intelligence
• 4 subtests of the Cambridge Neuropsychological Test Automated Battery (CANTAB), computerized battery that measures neurocognitive functioning: Intra-Extra dimensional Set Shift (IED), Stocking of Cambridge (SOC), Spatial Working Memory (SWM), and Rapid Visual Information Processing (RVP)
• SPSS computer programming for data analysis
• 1 test group: High risk facial features from Europe, ages 7-8
• 2 control groups: Low risk facial features from Europe and from China, ages 7-8

Thesis
Children with high risk FASD facial features will score significantly lower on the CANTAB test than the low risk FASD facial features control groups

Results
We found that while IQ scores were within normal range for all 3 groups, the high risk FASD group had significantly lower scores (p<.05) on 1 (SWM) out of the 4 subtests and had borderline significantly lower scores (p<.06) on 2 of the other subtests (IED, SOC). The high risk group did significantly better on 1 subtest (RVP).

Discussion
This data supports the hypothesis that high risk FASD children will have poor CANTAB scores compared to the low risk FASD control groups. The Chinese group had better scores on 3 of the 4 subtests, while the Europe control group had better scores on 2. The results show that high risk FASD facial features are correlated to poor performance on certain cognitive tests. However, the high risk group outperformed the controls on the RVP test, so the results do not fully support the hypothesis. Future larger-scale studies must be done to obtain more conclusive results on whether or not FASD facial features are associated with cognitive problems. This data is encouragement for future projects on the effects of FASD facial features on cognitive functioning.

References

Picture Source: http://www.med.umn.edu/peds/iac