



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) S. Annika Daug	Project Number S1208
Project Title The Association between Atypical Laterality and Attention Deficit Hyperactivity Disorder	
Objectives/Goals The aim of this study was to determine if there is a higher occurrence of atypical laterality, as manifested by mixed handedness, mixed eyedness, and hand-eye cross dominance, in children with ADHD. This study has important implications for the possible early detection of ADHD risk in the general population.	
Abstract Methods/Materials Hand and eye preference of 48 ADHD and 48 age and gender matched non-ADHD children, were assessed using the Lateral Preference Inventory. Preference was noted by a Pediatrician via direct observation or verbal response for 4 items of handedness and 4 items of eyedness. Responses were noted as right, left, or either. Data was scored for each subscale as the number of #right# responses minus the number of #left# responses. Mixed-handedness and mixed-eyedness were defined as all those who were not consistently right or left sided, plus those who were undefined. Cross dominance for hand and eye was recorded if the dominant hand and the dominant eye were on opposite sides. Percentage of mixed-handedness, mixed-eyedness, and hand-eye cross dominance between the ADHD and non-ADHD groups were compared.	
Results In the ADHD group, 16 out of 48 (33.3%) were mixed handed compared to 7 out of 48 (14.6%) in the non-ADHD group. Chi square value was 4.631, which was more than the table value of 3.841 at .05 level of significance. The results showed that there was a significant association between mixed handedness and ADHD. For eye dominance, both groups had a 31.3% incidence of mixed eyedness. For hand-eye dominance, 12 out of 48 (25%) had cross dominance for the ADHD group, compared to 11 out of 48 (22.9%) for the non-ADHD group. The difference was not significant.	
Conclusions/Discussion Mixed eyedness and hand-eye cross dominance did not prove to be associated with ADHD. On the other hand, mixed handedness was found to be significantly higher in ADHD. The results suggest that mixed handedness can potentially be used as a clinical marker of increased ADHD risk, especially because hand preference can be easily ascertained at no cost. This is valuable because if children with increased ADHD risk can be identified at an early age, intervention can be instituted promptly.	
Summary Statement This project is about determining if there is a higher incidence of mixed handedness, mixed eyedness, and hand-eye cross dominance in children with ADHD.	
Help Received Dr. Lilith Idea, Pediatrician, administered the questionnaires and noted hand and eye preference of the participants.	