



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

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Project Title Gender Differences in the Prevalence of Co-Morbid Disorders Affecting the ASD Population	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Roughly 20 percent of the autism spectrum disorder population suffers from co-morbid diseases (co-occurring conditions that affect the individual in addition to ASD). While it is known that co-morbidities affect males and females differently the normally functioning population, little research has been done to assess such gender differences in the ASD population. This investigation aims to fill that gap by using clinical data from the Stanford Translational Research Integrated Database Environment (STRIDE) to compare gender and age differences in the prevalences of co-morbid disorders across the ASD and non-ASD populations.</p> <p>Methods/Materials A series of online queries was carried out to probe the STRIDE database for ten co-morbid conditions. Queries were constrained by population (ASD versus non-ASD), gender, and age (0 - 18 years, 18 - 35 years, and ≥ 35 years). A total of approximately 1, 847, 365 subjects were analyzed, 4790 of whom were diagnosed with ASD. The prevalence of each co-morbid disorder across genders, age groups, and populations was statistically analyzed.</p> <p>Results Statistical analysis showed significant gender differences ($p < 0.05$) in the prevalences of co-morbid epilepsy, schizophrenia, autoimmune disorders, diabetes mellitus, inflammatory bowel disorder, and ADHD in the ASD population when unconstrained by age. The unconstrained non-ASD population showed significant gender differences ($p=0$) for all ten co-morbid conditions. Gender differences changed with age in both populations, and were significantly disparate between the populations for bowel disorders, diabetes mellitus, sleep disorders, IBD, CNS/cranial anomalies, and ADHD.</p> <p>Conclusions/Discussion This investigation highlights crucial gender differences in the prevalences of co-morbid disorders ASD population, confirming that gender does indeed influence co-morbid susceptibility in ASD individuals. Co-morbid percent prevalences and gender differences were found to vary differently over age groups in the ASD population than they did in the non-ASD population, suggesting that ASD individuals do not respond to traditional treatment methods in the same way that non-ASD individuals do. These findings elucidate the need to gain a better understanding of how ASD affects co-morbid pathology in males and females, a factor that has important implications in the development of gender specific treatments for ASD individuals.</p>	
Summary Statement This study highlights crucial gender differences in the prevalences of ten co-morbid disorders over age groups in the ASD and non-ASD populations, elucidating a need for further ASD and gender specific research in co-morbid pathology.	
Help Received Research conducted at Stanford Cognitive and Systems Neuroscience Laboratory under the supervision of Dr. Kaustubh Supekar.	