Alpha Auditory Entrainment for Cognitive Enhancement and Sensory Hypersensitivity in Youth With Developmental Disorders

Status: RECRUITING

Eligibility Criteria

Sex: ALL
Age: 5 years to 10 years old
Healthy Volunteers: This study is also accepting healthy volunteers
Inclusion Criteria:

- FXS Cohort: 1) Aged 5-10 years, inclusive; 2) Patient has full FMR1 mutation confirmed by genetic testing.
- ASD Cohort: 1) Aged 5-10 years, inclusive; 2) Have no known genetic mutation; 3) Have documentation of ASD diagnosis; 4) Score ≤ 15 on SCQ screen; 5) Be in good health per investigator.
- TDC Cohort: 1) Aged 5-10 years, inclusive; 2) Have no known genetic mutation; 3) Have documentation of ASD diagnosis; 4) Score ≤ 15 on SCQ screen; 5) Be in good health per investigator; 6) Patient has met normal developmental milestones; Patient has no family history of heritable neuropsychiatric disorders; 7) Patient has an IQ greater than 85 on the Stanford-Binet; 8) Score ≤8 on an SCQ screen.

Exclusion Criteria:

- All subjects: 1) Patient has auditory or visual impairments that cannot be corrected; 2) History of substance abuse or dependence within the past 6 months

Conditions & Interventions

Interventions:
OTHER: Alpha Auditory Entrainment, OTHER: Sham
Conditions:
Fragile X Syndrome, Autism Spectrum Disorder, Autistic Disorder, Asperger Syndrome
Keywords:
Neurodevelopmental Disorders, Autistic Disorder, Autism Spectrum Disorder, Fragile X Syndrome, Fragile X, FXS, ASD, Asperger, Autism

More Information

Description:
Fragile X Syndrome (FXS) is a complex neurodevelopmental disorder caused by a mutation on the X chromosome. Scientists have investigated FXS extensively in both humans and animals. Thus far, phenotypic rescue in animal models has not resulted in treatment breakthroughs in humans, though some important discoveries have been made. Research has shown that individuals with FXS process sounds differently than those in the typical population, and they also show baseline differences in brain activity, including high gamma activity, increased theta activity, and decreased alpha activity. The investigators' central hypothesis is that these alterations in brain activity (specifically alpha and gamma activity) impair the brain's ability to process new information, thereby impeding cognitive functioning and increasing sensory sensitivity. The investigators propose that auditory entrainment, a technique that involves playing special sounds through headphones, will normalize brain activity in individuals with FXS and lead to increased cognitive function and decreased sensory hypersensitivity.

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