Title: Social and Object Attention as Markers of Anxiety in Toddlers with Neurodevelopmental Disorders

Authors: Kayla Smith, Abigail Hogan, Elizabeth Will, and Jane Roberts

Introduction: Children diagnosed with fragile X syndrome (FXS) or Down syndrome (DS) are at increased risk of comorbid mental health disorders, such as anxiety (Cordeiro, Ballinger, Hagerman, & Hessl, 2011), though rates of anxiety are lower in DS than FXS (Dykens, Shah, Sagun, Beck, & King, 2002). Anxiety is associated with long-term impairment, but early intervention can reduce the severity of anxiety symptoms and optimize long-term outcomes (Svihra & Katzman, 2004). Thus, early detection of anxiety risk markers is of critical importance. Previous studies have suggested that attention bias away from threatening stimuli is observed in children with social anxiety and specific phobia (Waters, Bradley, & Mogg, 2014). Additionally, increased fear during novel social situations is associated with social anxiety, whereas heightened fear to novel or frightening objects could be linked to specific phobia or generalized anxiety (Dyson, Klein, Olino, Dougherty, & Durbin, 2012). This study aims to identify patterns of visual attention in children with FXS and DS at 24 months-of-age elicited from presses meant to evoke social fear (i.e., fear in response to a novel and non-responsive person) and object fear (i.e., fear in response to a novel and potentially fearful object).

Method: Participants included 78 children assessed at 24 months-of-age: 36 FXS (chronological age $M = 25.15$ months, $SD = 1.47$ months), 12 DS (chronological age $M = 25.03$ months, $SD = 2.29$ months), and 30 TD controls (chronological age $M = 25.86$ months, $SD = 5.51$). The proportion of males in each group was similar (FXS: $n = 24$, 66.7%; DS: $n = 10$, 83.3%; TD: $n = 23$, 76.7%). Social fear was elicited using the Stranger Approach press, and object fear was elicited using the Scary Spider press of the Lab-TAB (Goldsmith & Rothbart, 1996). The proportion of time spent averting attention away from the fear-inducing targets (i.e., stranger or spider) was calculated.

Results: Two-way repeated measures ANOVAs with Bonferroni post hoc comparisons were used to examine group differences in visual attention for the Stranger and Spider presses. For avoidant attention, a group-by-press interaction was revealed, $F(2, 75) = 6.67, p < .01$, in that groups demonstrated similar avoidance to the social fear-inducing target, $ps = 1.00$, but the FXS group exhibited more avoidant attention to the object fear-inducing target than the TD and DS groups, $ps < .05$.

Discussion: Findings suggest that toddlers with FXS exhibit more fear behavior indexed by avoidant attention than DS and TD groups. The group discrimination was pronounced when participants were presented with a potentially fear-inducing object. Our results suggest that groups show similar attention patterns in response to social fear, but the FXS group showed elevated attention avoidance during object fear. Increased attention avoidance in toddlers with FXS possibly indicates higher risk of specific phobia and social anxiety. This is consistent with reports of higher levels of anxiety in children with FXS. Social fear appears to be consistent among the FXS, DS, and TD groups, but non-social fear manifests differently at 24 months-of-age. Future work should explore other behaviors or physiological biomarkers for possible implications of future risk of anxiety. Discovery of early behavioral markers of anxiety could lead to earlier detection and thus a better likelihood of finding an appropriate intervention.
References/Citations:


