Title: Social Communication and Expressive Language in Children with Idiopathic ASD and Comorbid ASD and Fragile X Syndrome

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Background: Social communication is a core deficit for individuals with autism spectrum disorder (ASD). Children with fragile X syndrome (FXS) also often have difficulty with social communication. It is estimated that as many as 60% of males with fragile X syndrome (FXS) meet diagnostic criteria for ASD (FXS+ASD; Klusek, Martin & Losh, 2014). The impact of ASD on social communication in children who have FXS+ASD is unclear. This study examines the social profiles of children with ASD and FXS + ASD using the Autism Diagnostic Observation Schedule (ADOS; Lord et al., 1999) and a conversational language sample to determine if there are differences in social interaction profiles of children with ASD vs FXS + ASD when controlling for expressive language ability. The relationship between expressive language and social interaction profiles in each group is also explored.

Method: This study examined the language and social communication profiles of 20 males with idiopathic ASD between 9.42 and 16.75 years of age (M = 13.43, SD = 2.01), and 30 males with FXS+ASD between 9.00 and 16.42 years of age (M = 12.24, SD = 2.10). Groups were matched on ASD symptom severity scores from the ADOS. Social affect scores and specific items within the social affect domain consistent across ADOS modules 2 and 3 were examined for group differences. A conversational language sample with at least 100 utterances was collected for each child and transcribed using the Systematic Analysis of Language Transcript Software (SALT: Miller & Igelsias, 2012). An ANCOVA was done to determine group differences in social affect when controlling for expressive language (mean length of utterance in morphemes). We completed spearman correlations to determine the relationship between expressive language and social interaction scores on the ADOS.

Results: When controlling for expressive language skill, there was a significant difference in social affect scores on the ADOS between children with ASD and children with ASD + FXS, $F(1,48) = 8.782$, $p = .005$, partial $\eta^2 = .155$. Children with FXS + ASD were found to have less severe symptoms in the domain of social affect (M = 9.27) than children with ASD (M = 11.33). Children with FXS + ASD had a slightly greater amount of unusual eye contact than children with ASD, however children with ASD had greater impairments in social affect across all other items. Children with ASD had greater difficulty communicating shared enjoyment during interactions, had less reciprocal social interactions, and lower overall quality of rapport with the examiner. In children with FXS + ASD, greater expressive language skills during conversation were significantly associated with less severe social profiles on the ADOS ($r_s = -.398$, $p = .029$). For children with ASD, greater expressive language skills were not significantly associated with less severe social profiles on the ADOS ($r_s = -.296$, $p = .193$). Pragmatic language coding using conversational language samples is currently underway to determine if the differences between groups in social affect using the ADOS are evident during functional communication, and the relationship between language ability to specific elements of pragmatic communication in each group.

Discussion: This study provides important implications in determining the role of ASD on the social communication phenotype in children with FXS + ASD. Children with FXS + ASD had less impacted social skills than children with idiopathic ASD. This study suggests that greater expressive language skills in children with idiopathic ASD is not necessarily associated with greater social ability as it is in children with FXS + ASD. Further exploration of pragmatic language skills during conversational language will provide insight into the functional impact these differences in social affect have between the groups. The impact of expressive language ability, nonverbal IQ and overall ASD symptom severity on social language skills of children with ASD and FXS + ASD will be discussed.

References/Citations:

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