Developmental trajectories of network structure in emerging vocabularies in children with autism spectrum disorder

Eileen Haebig, Louisiana State University
Stanley West, Louisiana State University
Christopher Cox, Louisiana State University

Most children with autism spectrum disorder (ASD) have delayed vocabulary growth relative to their typically developing (TD) peers. Previous studies have revealed that children with ASD are less likely to encode associated features of novel objects, suggesting inefficient encoding or different processes for acquiring the meaning of words. We conducted a network analysis on the expressive vocabularies of 2,647 TD toddlers (Mage= 20.73 months) and 200 children with ASD (Mage= 48.14 months) to estimate the trajectory of semantic development in each group. Network structure was based on adult-generated word associations. The groups were vocabulary-matched (words produced: MASD= 230.87, MTD= 225.70). The trajectories of vocabulary growth for both groups reflect learning that is influenced by the structure of the semantic environment. However, differences in clustering coefficient were observed with children with ASD achieving their peak average clustering coefficient with vocabularies of ~200 words while it took TD toddlers until ~300 words. This is consistent with children with ASD having distinctive learning biases following from core features of autism (i.e., restricted interests).

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