Multimodal Attention and Word Learning in Children with ASD

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Children with autism spectrum disorder (ASD) experience social attentional deficits and sometimes significant language delays, generally involving difficulties in vocabulary acquisition (Arunachalam & Luyster, 2015). However, the link between attention and word learning (WL) in ASD children remains unclear. Here, we assessed this question by recording 3- and 4.5-year-old ASD (N=22) and typically developing (TD, N=25) children eye gaze patterns during a dyadic, word-teaching interaction (an adult gazing and naming a visible object) and a subsequent WL test. In the learning phase, a speaker looks at one of two objects and names it three times (x2). At test, the two objects are presented side by side while the speaker's voice asks for one of them: first for the named object, and then for a new word (mutual exclusivity test). Children underwent this process two times. Group results from the learning phase showed equivalent attention to the face, target- and distractor-object, yet revealed lower number of shifts between the face and the target-object in ASD than TD children [$F(1, 45) = 6.27$; $p = .016$]. In the test phase, the TD group showed evidence of WL [$F(1, 22) = 22.49$; $p < .001$], while in the ASD children, only the older (4.5yo) group learned the new words [$t(17) = 2.12$; $p = .049$]. Last, individual analyses revealed that number of shifts between face and target-object correlated with WL performance in the TD ($p = .017$), but not ASD group ($p > .1$). Attention to speaker's face, eyes or mouth did not correlate with WL performance ($ps > .1$). These results reveal a delay in ASD children's WL skills, and most importantly, they suggest that the formation of new word-object labels in ASD children may be hindered by reduced attentional shifting between the face and the target object of a scene.