

# 2021 Gatlinburg Conference Poster Submission

**Title:** Structurally-Specific Lexical Diversity of Minimally Verbal Children with Autism

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**Introduction:** Structurally-specific lexical diversity (i.e., variety of unique subject-verb combinations) has been found to be a clinically meaningful and developmentally sensitive measure of language development in typically-developing children (Hadley et al., 2018), though less is currently known about lexical diversity in young children with Autism Spectrum Disorder (ASD). Parent input, specifically varied use of unique subject-verb combinations through Toy Talk (e.g., giving the toy a name and talking about the toy; “The tower fell!”; Hadley & Walsh, 2014), supports vocabulary development for children with typical language development. This suggests that interventions for ASD can focus on ensuring rich parent input, which may increase children’s lexical diversity. As such, the current study examined changes in lexical diversity in children who were receiving parent-mediated naturalistic developmental behavioral interventions (NDBIs) and predictors of lexical diversity changes in children.

**Method:** Participants in the current study were drawn from a larger study of various parent-mediated NDBIs for young children with ASD (50 dyads). Participants were included in the current study if they a) had a pair of parent-child play interaction videos from 6 months apart and b) were not consistently using 4-5 word phrases or more complex sentences (e.g., combining phrases) at the time of the first video in the pair, given that measuring lexical diversity is most appropriate when children are first learning to use phrases beyond two-word combinations (Hadley et al., 2018). Trained and reliable coders transcribed parent and child speech from interaction videos using Systematic Analysis of Language Transcripts software, 2012 Research version (SALT; Miller & Iglesias, 2012). During transcription, coders tallied the number of child unique-subject verb combinations (SVs; Hadley and Walsh, 2014) and parent use of “Toy Talk” (giving the toy a name and talking about the toy; Hadley & Walsh, 2014). We assessed the influence of parent language input using a zero-inflated negative binomial regression model to account for the inflated percentage of the sample producing 0 SVs (70 % at Time 1; 48% at Time 2). The model included baseline parent Toy Talk, timepoint, child baseline non-verbal IQ, baseline BOSCC social communication (Grzadinski et al., 2016), child baseline age and child gender. To further examine predictors of SV changes, children who were using 0 SVs at baseline were divided into children whose sentence diversity scores improved (“Improving” n=13) over the 6-month intervention period versus those whose were stable (“Stable” n=22; no use of SVs) over time. Baseline cognitive levels, autism symptoms, and parent Toy Talk use of these two groups of children were compared using t-tests.

**Results:** In the regression model, parent toy-talk emerged as a significant predictor of growth in child SV use across the 6-month intervention period ( $z = 3.36, p < 0.001$ ). Timepoint ( $z = 2.98, p < 0.01$ ), baseline non-verbal IQ ( $z = 3.79, p < 0.001$ ) and baseline child age ( $z = 2.42, p < 0.05$ ) were also significant predictors of change in child SV use, while gender and baseline social communication were not significant. Children in the improving group had higher baseline non-verbal IQ (stable:  $M = 62.52, SD = 14.34$ ; improving:  $M = 76.71, SD = 16.21; p < 0.001$ ) and verbal IQ (stable:  $M = 43.81, SD = 15.72$ ; improving:  $M = 68.96, SD = 21.12; p < 0.001$ ), and lower baseline ADOS-2 CSS (stable:  $M = 8.18, SD = 1.60$ ; Improving:  $M = 7.00, SD=1.65; p = 0.004$ ). Baseline parent Toy Talk use was also higher in the improving group (stable:  $M = 5.59, SD = 4.95$ ; improving:  $M = 12.31, SD = 10.67, p = 0.001$ ).

**Discussion:** Results suggests that parent language input, specifically parental use of toy talk sentences, is related to increases in children’s subject-verb combination use after 6 months. This indicates that a parent-mediated intervention model in which parents are trained to increase their use of toy talk phrases, in addition to the existing social, cognitive, and behavioral foundations of NDBI (Schreibman et al., 2015), is a promising means of increasing the lexical diversity of minimally verbal children with ASD. Results also highlight that higher cognitive skills and lower autism symptom severity may facilitate early trajectories of grammatical growth in young children with ASD.

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