**Parents speak more about Object Features when children engage in Sustained Attention**

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Do parents prioritize certain types of information when their children are engaged in Sustained Attention (SA) to an object? Here, guided by work on parent responsiveness on the one hand (Tamis-LeMonda et al., 2001) and work highlighting the importance of children's visual experience during naming on the other (Yu et al., 2019), we hypothesize the topical content of parent speech relates to children's visual SA (defined as episodes of attention longer than 3 s) to speech targets. But this hypothesis is complicated by research separately indicating the content of parent utterances (Chang & Deák, 2019) and children's patterns of SA (Suanda et al. 2016) are both tied to larger scale structure in parent discourse. Thus, here we explore relations between the content of parent utterances and coinciding patterns of child SA while considering interrelated influences of discourse structure.

To address this aim, we recruited parent-child dyads into the lab to participate in a free toy play session—during which we recorded parent speech and collected gaze data via head-mounted eye-trackers (Figure 1A&B). We coded parent speech using a novel coding scheme of mutually exclusive speech content types that builds upon the framework created by Chang and Deák (2019; Figure 1C).

We asked: How do the (IV.1) topical content of referential parent speech, (IV.2) whether it is in a discourse and (IV.3) timing relative to first (consecutive) target reference relate to the (DV) temporal patterning of coinciding child SA to speech referents? We explored relations between these IVs and SA by conducting analyses of paired events consisting of parent speech overlapping with either preceding or following episodes of SA using linear mixed effect models. Models included the three IVs as fixed effects and subjects and items as random effects. Given limited space, here we focus on the subset of results showing pairwise differences between the estimated marginal means for (IV.1) topical content types output from the models.

First, results showed parent speech conveying information about Object Features is significantly more likely to overlap with preceding episodes of SA than the other content types (Figure 1D). Second, we found speech about Object Features occurs significantly later in preceding SA episodes than other speech types (Figure 1E). Finally, analyses revealed episodes of SA overlapping with speech about Object Features are significantly longer than for episodes of SA overlapping with speech about Actions and Activities or object Labels (Figure 1F). Crucially, while not discussed here, all of these results hold true while considering the interrelated influences of discourse structure.

This work is the first systematic exploration of relations between the topical content of parent speech and child attention in a naturalistic environment that takes into account larger scale structure in parent speech. The findings show parents prioritize conveying information about the features of objects during optimal learning opportunities: namely, when the child has been engaged in an episode of SA to the referent object. While the degree to which such prioritization generalizes across contexts remains unexplored, the potential impacts on early lexico-semantic development are wide ranging. For example, recent network modeling work showing that labels for objects with more perceptual features are learned earlier (Peters & Borovsky, 2019) could in part be explained by the current findings. Thus, this work highlights how recently proposed developmental dependencies between the perceptual/sensory structure of early vocabularies and lexical development may, in part, be driven by patterns of what parents say to their children and when in the course of daily interactions.

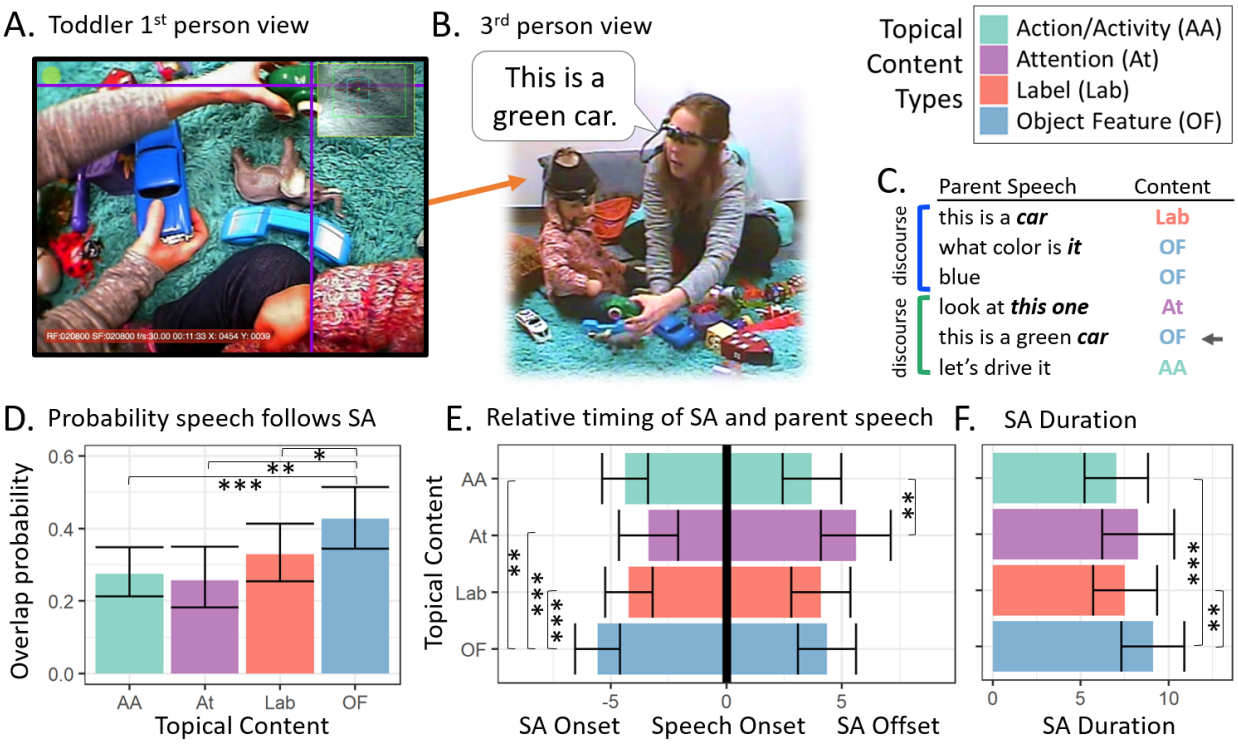


**Figure 1.** *Row 1*: Experiment setup showing A) first-person toddler view, B) third-person view and C) corresponding section of speech transcript. *Row 2*: Comparisons between content types of estimated marginal means output from linear mixed effects models of the D) probability parent speech overlaps with preceding episodes of Sustained Attention (SA), E) timing of SA onsets and offsets relative to speech onsets and F) durations of overlapping episodes of SA. *** p < .001. ** p < .01. * p < .05.

## References


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