



Perceptual Salience Affects Familiar Word Processing in Young Typically Developing Toddlers

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INTRODUCTION

- Typically developing young children are influenced by their own interests during novel word learning.
- This study aimed to determine whether children are similarly affected by the salience of objects in their environment during familiar word processing in a looking-while-listening task.
- In the looking-while-listening paradigm, children were presented with two familiar objects on a screen, accompanied by speech naming one of the objects. The object which was not named is referred to as the “distracter.”
- In this study, the perceptual salience of the objects was manipulated. In the Balanced Condition, both objects were equal in perceptual salience. In the Unbalanced Condition, the distracter object was more salient than the target.

Our research questions were:

- How does competing perceptual salience affect word processing in typically developing toddlers?
- Does the degree of disruption differ based on children’s vocabulary?

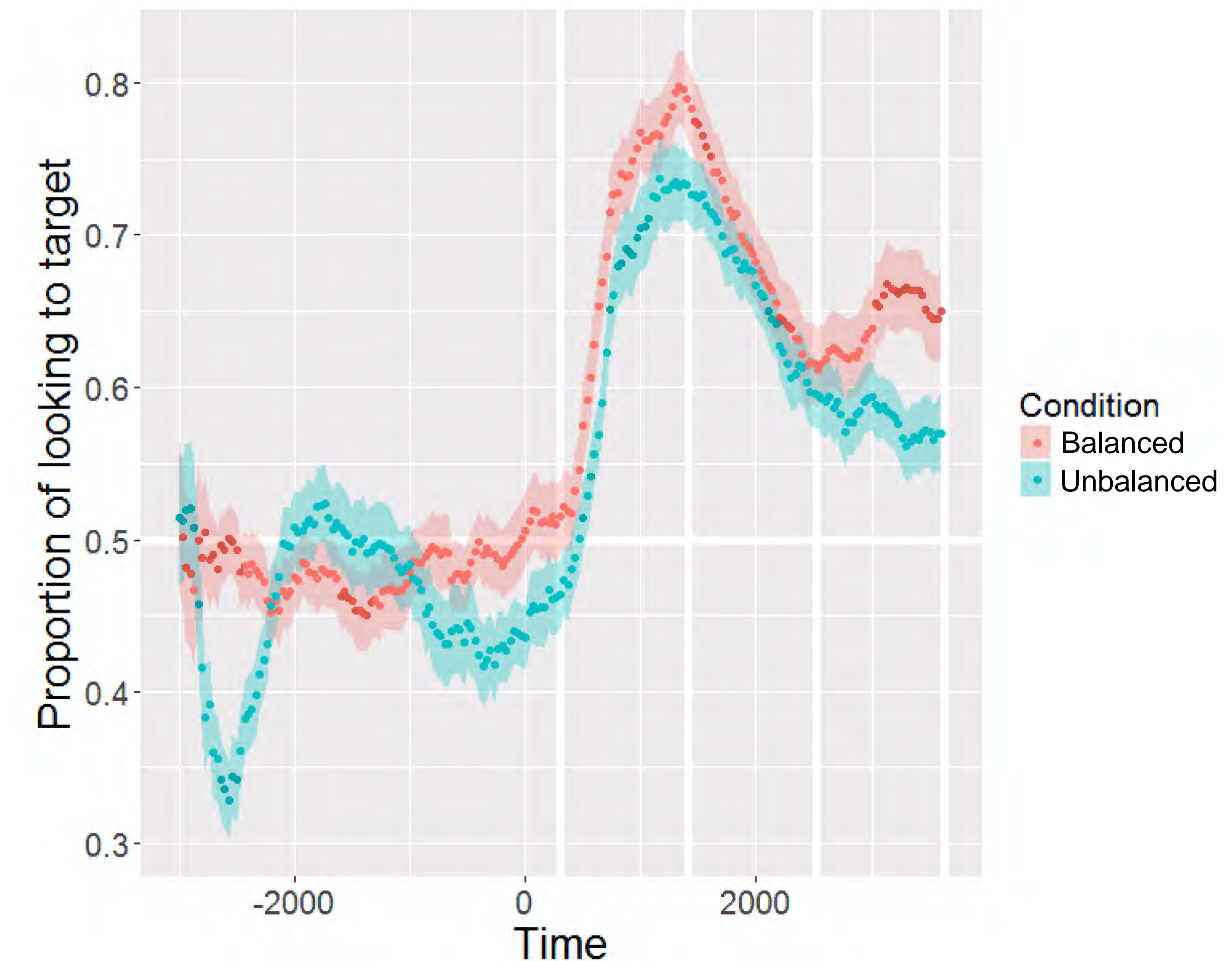
We predicted that competing perceptual salience would disrupt the accuracy and efficiency of children’s word recognition, and that children who had weaker language skills would be most vulnerable to disruption.

METHODS

- Participants were 59 typically developing toddlers (29 female) between 18 and 26 months of age ($M = 22$, $SD = 3$).
- Parents completed the MacArthur Communicative Development Inventory, Words and Sentences (CDI).
- Children’s eye gaze was recorded and manually coded offline from video. Looks were coded as to the target, to the distracter, shifting between pictures, or away from the screen.
- Data were analyzed using growth curve analysis. The independent variable was Time, and the dependent variable was the empirical log odds of looking to target. All models contained fixed effects of Time, Condition, and Time x Condition interactions, as well as random effects of Subject and Subject x Condition. One-tailed p values were used based on the direction of our predictions.

RESULTS

- Based on visual inspection of the grand mean curves, gaze data after noun onset were analyzed in three adjacent time windows. The initial window was from the earliest voluntary eye movement to peak looking to target (300-1410 ms), the middle window was from the peak to a local minima in the curve (1410- 2520 ms), and the final window was from this local minima to the end of the trial (2520- 3630 ms).
- In all three time windows, the the intercept (overall accuracy) was significantly lower in the Unbalanced Condition than in the Balanced Condition ($ps > 0.04$), indicating that children looked less at named images in the Unbalanced Condition than in the Balanced Condition.
- In Window 3 only, mean linear slope values differed significantly between conditions ($p = 0.04$). The linear effect was positive in the Balanced Condition but negative in the Unbalanced Condition.
- Vocabulary (CDI percentile rank) was significantly associated with accuracy in both conditions ($p = 0.03$). In the Unbalanced Condition only, vocabulary was significantly associated with linear time ($p = 0.045$), indicating that children with lower vocabulary scores processed familiar words less efficiently than children with higher vocabulary scores when a salient distracter was present.



CONCLUSIONS

Familiar word processing was disrupted by perceptual salience, and children with lower vocabulary scores showed more disruption.

Our findings indicate that perceptual salience influences familiar word processing—an issue that is important to incorporate into current theories of language development.

This research may also help us understand language deficits in children with autism spectrum disorder, whose attention is strongly influenced by perceptual salience.

Unbalanced Condition



“Look at the ball.... That’s cool!”

Balanced Condition



“Look at the ball.... That’s cool!”

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