**Word learning from overheard speech in autistic preschoolers**

Typically-developing children can learn new words by overhearing others' conversations [1-3]. While autistic children can learn words when directly addressed, either in person [4-6] or over video [7], there is scant evidence about whether they learn by overhearing. Because direct interaction can be overwhelming for autistic individuals [8-9], overhearing contexts with no expectation of participation may offer additional learning opportunities.

Therefore, we tested autistic preschoolers' abilities to learn words from overheard speech over videoconferencing (due to COVID-19). We also tested immediate retention of the words. Autistic children (N = 92) (32-71 months, mean 53 months) participated in two word-learning trials (procedure adapted from a small pilot study [10]). In the Addressed condition, the experimenter faced her webcam and spoke to the child. She presented three novel objects, labeling one with a novel noun (e.g., "Let's see the toma"). At test, children were prompted to "find the toma" from among the three objects. In the Overheard condition, she repeated the procedure with new objects, but facing away from the camera and directing her speech to another adult. After a 35-second distractor video, they viewed the test phase from each trial again to assess retention. See Figure 1.

Eye gaze was manually coded. See Figure 2. At test, mixed-effects regression revealed no effect of condition, and comparisons to chance looking revealed learning in both conditions. The retention test revealed a significant effect of condition in favor of the Addressed condition, but neither condition showed above-chance looking, suggesting that learning was fragile.

Our results reveal autistic children's abilities to learn from both addressed and overheard speech, extending the findings to videoconferencing; however, retention was poor. When considering how to support vocabulary learning in autistic children, overheard speech can be considered as potential input; we need additional insight into how to support retention.

Word count: 299
Keywords: autism, word learning, preschool

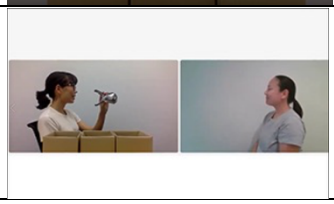
| | Familiarization | Initial Test | Retention Test |
|---|---|---|---|
| Addressed condition |  |  |  |
| Overheard condition |  | | |

Figure 1. Schematic depiction of visual stimuli on one representative trial.

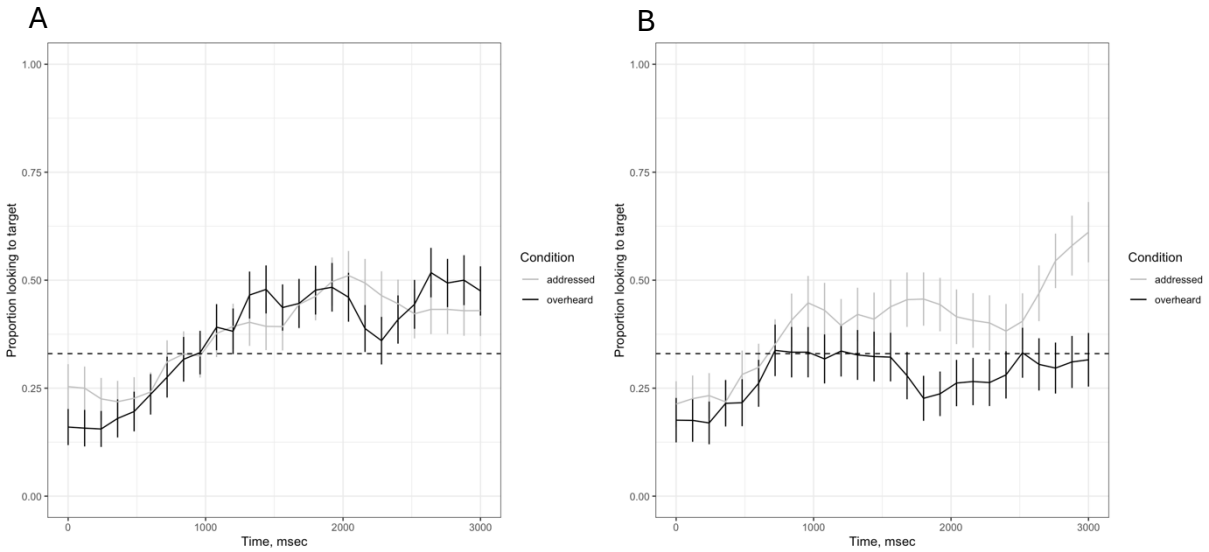



Figure 2. Children's eye-gaze to the target image after being prompted to find the target object in the initial test (Panel A) and the retention test (Panel B). The dotted line shows chance looking (0.33, because there were three objects on the screen. (Note that additional children were excluded due to track loss in the retention test.)

References

[1] Akhtar, N., Jipson, J., & Callanan, M. A. (2001). *Child development*.
[2] Foushee, R., Srinivasan, M., & Xu, F. (2021). *Cognition*.
[3] Gampe, A., Liebal, K., & Tomasello, M. (2012). *First language*.
[4] Luyster, R., & Lord, C. (2009). *Developmental psychology*.
[5] de Marchena, A., Eigsti, I. M., Worek, A., Ono, K. E., & Snedeker, J. (2011). *Cognition*.
[6] McGregor, K. K., & Bean, A. (2012). *Journal of Speech, Language, and Hearing Research*.
[7] Tenenbaum, E. J., Amso, D., Abar, B., & Sheinkopf, S. J. (2014). *Frontiers in psychology*.
[8] Black, M. H., Clarke, P. J., Deane, E., Smith, D., Wiltshire, G., Yates, E., ... & Chen, N. T. (2023). *Research in Autism Spectrum Disorders*.
[9] Boldsen, S. (2022). *Frontiers in Psychology*.
[10] Luyster, R. J., & Arunachalam, S. (2020). *Journal of Autism and Developmental Disorders*.