Instruction following by children with autism: A comparison of visual cues with spoken cues

Ralf Schlosser, Emily Laubscher, Rajinder Kou, Suzanne Flynn, James Sorce, Jennifer Abramson, Linda Hotz, Holly Fade, Howard Shane

1Northeastern University, 2Boston Children’s Hospital, 3Texas Tech University Health Services Center, & 4MIT
Session 7714

1. Ralf Schlosser, 2Emily Laubscher, 3Rajinder Kou, 4Suzanne Flynn, 5James Sorce, 6Jennifer Abramson, 7Lindsy Hotz, 8Holly Fade, 9Howard Shane

1Northeastern University, 2Boston Children’s Hospital, 3Texas Tech University Health Services Center, & 4MIT
Session 7714

Background

- Limited research supporting the effectiveness of interventions using static and dynamic scene cues (Daughin et al., 2004; Mechling & Gustafson, 2008; Pierce & Schreibman, 2004).
- Dearth of studies comparing spoken input with static and dynamic scene cues without providing explicit instructions in terms of receptive understanding of prepositional phrases
- Given the comprehension difficulties of many children with autism and the potential advantages of augmented input, such comparisons are critical.

Purpose

- To compare spoken input to two augmented input modalities (i.e., static scene cues plus speech, dynamic scene cues plus speech) in terms of their effects on carrying out directives that involve object-preposition-location.

Pre-assessments

- Spoken Noun Comprehension
  - Retrieve one object from an array of three objects - all six nouns were tested (figure girl, figure boy, figure man, lamp, box, bowl)
- Match-to-Sample
  - Present with a photo and asked to match to figures and objects ("Give me this")
  - Six video clips depicting various actions ("hands on head"); your turn" or "now you do it. 2 trials per action
- Placed into categories of "high" & "low" for each task

Procedures

1. Exp. placed target items in random order on table
2. Focused child’s attention through gestural or spoken means and repositioning the chair
3. Spoke directive or presented condition specific cue
4. 10 s to respond and a 3 second 11! (Repeat if no response)
5. Provided non-specific intermittent feedback
6. Used count-down board as needed to sustain motivation

Results

- Non-significant (p = .906): assumption of homogeneity of variance has been met.

Levine F Statistic: test for equality of error variance.

- One-way within-subjects ANOVA
  - Main effect for condition, F (2, 27) = 7.559, p = .003
  - Significant difference between spoken and dynamic scene cues (p = .003), and spoken and static scene cues (p = .002)
  - No difference between static and dynamic scene cues (p = .887)

Design and Measures

- Within subjects design
- Dependent variable
  - Carrying out the experimenter’s directive
- Operational definitions
  - Error: child placed agent relative to the object per preposition within 10 s of the spoken and/or visual directive
  - Incorrect: child placed agent in a location that differed from preposition or if the child took longer than 10 s

Discussion

- Provides preliminary evidence that static scene cues and dynamic scene cues are more effective than spoken cues alone related to directives involving prepositional phrases without explicit instruction.

Limitations, Directions, & Conclusions

- Small sample size & small corpus of directives
- Ceiling effects may have influenced results
- Children were presented with target objects/figures only (i.e., no distractors)
- Design did not rule out order effects
- Unclear to what extent responding was under the control of spoken cues in the two augmented input conditions
- Optimize stimuli and replicate

Children with Autism or PDD-NOS can carry out directives more effectively when input is provided through augmented means (visual [static or dynamic scene cues] plus the auditory modality [spoken], rather than providing input through the auditory modality alone (i.e., spoken).

Key References


Acknowledgements

- Portions of the work in this study have been funded in part by the National Institute on Disability and Rehabilitation Research (NIDRR) under Grants #H133E030018 & #H133E080011 to the RERC on Communication Enhancement.