

The Use of Animated Feedback in Visual Scene AAC Displays

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Introduction

AAC devices may impose significant learning demands on children to operate the devices effectively. Most AAC devices available today are designed by adults with adult conceptions of the world (Light & Drager, 2006). Young children are still in the process of developing their language skills as they interact with the environment. By not taking a child's perspective on language and the environment, the learning demands of an AAC device multiply.

Children may have significant difficulty locating abstract (e.g., verb) concepts within AAC devices (Drager et al., 2003). It is difficult to represent verb concepts within a dynamic display. The AAC device typically displays a static picture of the verb, but the representation of the verb in the child's mental lexicon may be dynamic. The purpose of this study was to attempt to bridge the gap between the static object located on an AAC display to the concept of the verb located in the child's mental lexicon. It was hypothesized that the use of animated feedback may bridge that gap for young children, in order to increase their accuracy of locating verbs within a display in a shorter amount of time than without animation.

Methods

A total of 20 typically developing 3-year-old children participated in the current study. All children had no significant history of language, visual, cognitive, or motor impairments as indicated by parent report. Using typically developing children allowed the researcher to examine the effects of feedback on learning without confounds of other impairments, and helped to ensure equivalency of groups.

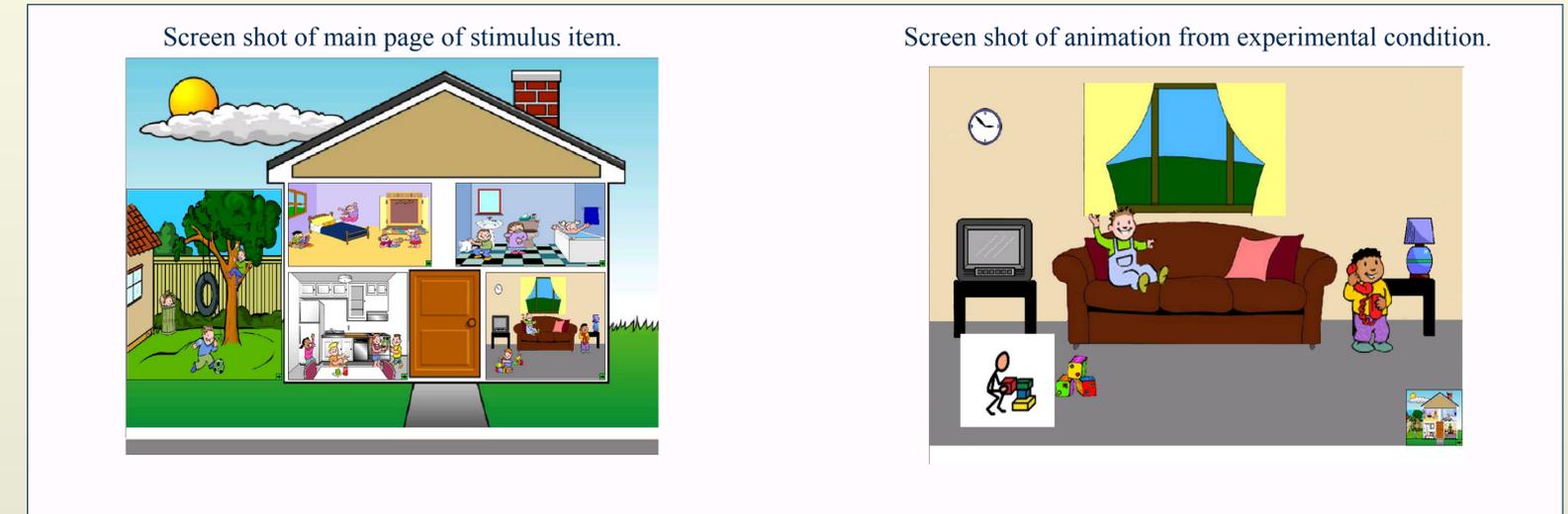
The children were introduced to the AAC technology in the context of a play activity. Sessions were scheduled at 3-5 day intervals in order to promote learning and avoid memorization of the task. Children were required to locate 15 verbs in the context of the play activity during each session. The order of the verbs was randomly selected for each session.

Methods (cont.)

Each child also received an instructional model of the task before being required to locate the 15 verbs. A scripted, instructional prompt was used for each target verb (e.g., Katie is hungry. Show her how to say "eat.") The last word of the prompt served as the cue for the child to locate that verb. Instructional prompts were only stated once. If children were incorrect or did not respond within 20 seconds, they were given an instructional response. The researcher read a prepared response explaining the rationale of where the item is in the house (e.g., "eat" is in the kitchen because that is where the food is) and the specific item (e.g., This boy has food to eat). Instructor responses for incorrect or no response were the same in both experimental conditions.

Results

Results of the current study revealed that animation did not provide significant improvement to navigation accuracy as opposed to verbal only feedback. A repeated measures ANOVA was conducted with Feedback (Animated/Verbal, Verbal Only) as the between-subjects factor and Time (Session 1, 2, 3) as the within-subjects factor. The effect for Feedback was not significant, $F(1,18) = .242, p > .05$ ($p = .629$). Results revealed that time was a significant factor in learning to locate verbs within a dynamic display, regardless of condition. The main effect for Time was significant, $F(1,18) = 52.40, p < .01$. Post Hoc testing revealed a significant difference between scores in Sessions 1 and 2, $p < .01$. There was not a significant difference between scores in Sessions 2 and 3, $p > .05$ ($p = .37$). In addition to the learning that occurred across sessions, the majority of children ($n = 14$) performed at mastery level (80%) by the second session of testing, regardless of feedback condition. By the end of Session 3, 90% of children in the study had performed at mastery level on the task.



Discussion

The effect of animated feedback did not improve children's ability to accurately locate verbs within a dynamic communication display. Children who participated may have been too old to benefit from use of animated feedback during the task. The stimuli used in both the experimental and control conditions may have given children too many cues, and so reduced the demands of the task. One concern about the animations used in the study is that they were not similar to the symbol representations. The animations used in the experimental condition were 4-frame line drawings. Research has stated that only a hint of animation is enough for an individual to determine the action taking place (Wilkinson & Jagaroo, 2004).

Results revealed that there was a significant effect for time in both conditions. Participants performed markedly better after the first session of the task, regardless of the condition they were in. Interestingly, even learning occurred across both groups in the first session. The majority of children in both conditions performed at mastery level by the second session.

Results of the study suggest two important clinical implications. First, the current study suggests that a carefully thought out scene may lead to high levels of success even without animation. Second, the activity used for both conditions may be an effective teaching tool for children using alternative communication devices. Across 2 sessions (approximately 25 minutes of interaction), children located 12 concepts within a 5 room scene on a dynamic display. This could provide a child with a significant increase in vocabulary and 2-word utterance construction.

References

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- Light, J., & Drager, K. (2006). AAC to Improve Language, Literacy, and Communication Outcomes for Young Children with Complex Communication Needs. Paper presented at the State of the Science conference on Communication Enhancement, Los Angeles, CA.
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