

Influences of Parent-Child Interaction on Preschoolers' Computer Skill Mastery

A. Lauricella, S. Kumar, R. Barr, & S. Calvert

Georgetown University



Introduction

Computers are increasingly a part of young children's everyday experiences. Specifically, 43% of children ages 4 to 6 use a computer several times a week or more with 16% using computers on a typical day, spending nearly an hour with this form of media (Rideout & Hamel, 2006). Research on patterns of very early computer use find that children shift from using a computer while sitting on a parent's lap around 2.5 years to using a computer alone at 3.5 years (Calvert, Rideout, Woolard, Barr, & Strouse, 2005). This transition to autonomous computer use requires children to master skills with a mouse.

Social interaction plays an essential role in children's cognitive development and that through interaction and cultural contexts children learn numerous skills necessary for development (Vygotsky, 1978). Supporting Vygotsky's scaffolding theory, studies with preschoolers during joint book reading have found that parents adjust their verbal demands to meet the communication abilities of their children (Pellegrini, Brody, & Sigel, 1985).

The question addressed here is what kind of scaffolds parents provide to young children who are reading an online story book. That is, will parents focus on scaffolds to support the mouse skills, or will they focus on scaffolds for story comprehension, as when reading a traditional story book. These parental decisions have implications for both early computer literacy skills as well as story comprehension skills.

Method

Participants: 40 4-year-olds (23 male) and their parents.
Procedure: Each child-parent dyad was videotaped in their homes while they watched an online computer storybook called *Elmo Goes to the Doctor* from the SesameStreet.org website on a laptop.

Control of mouse: Experimenters recorded the number of times the child or parent clicked the mouse in real time. The ratio of parent to child clicks was calculated. Based on these ratios, approximately half the children (**active child clickers**) and half of the parents (**passive child non-clickers**) were classified as being in control of the mouse.

Parent-child verbal interactions were transcribed from the videotapes. **Parent questions** directed to children about the story and phrases about **computer mechanics** were coded and calculated as a proportion of overall verbalizations during the session.

Attention: Looking time was measured using videotapes.

Comprehension Assessments: 10 multiple choice questions and a picture sequencing task.



Results

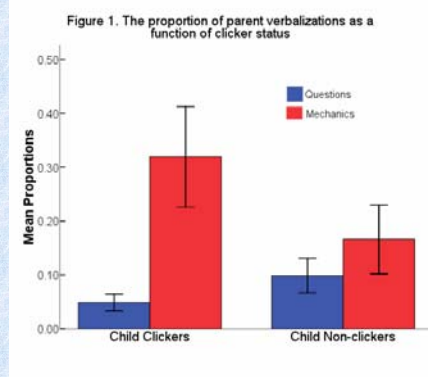
Table 1. Mean scores (SD) for measured outcomes

	Child clickers	Child Non-Clickers
Minutes to read online book*	13.82 (3.30)	10.20 (3.68)
Overall % looking	97.51 (4.70)	95.29 (5.58)
Maximum mean look (min)	7.83 (4.10)	5.45 (5.01)
Comprehension score	6.84 (2.19)	7.05 (2.09)
Sequencing score	6.79 (2.82)	7.38 (2.44)
Age of first computer exposure (months)	28.64 (5.90)	30.60 (6.60)

* Indicates a significant group difference at the .01 level

Although the story took significantly longer to read when the children were actively manipulating the mouse, $t(31) = 2.95$, $p < .01$, there were no differences in attention or comprehension skills.

Parent-Child Interaction A 2(verbalizations) x 2(clicker status) ANOVA with repeated measures across verbalizations indicated a significant interaction between the type of verbalization and clicker status, $F(1,29) = 12.14$, $p < .01$. The transcripts of child clickers contained a significantly higher proportion of computer mechanics phrases, whereas transcripts of child non-clickers contained a significantly higher proportion of parental questions about the story.



Summary of Key Findings

This is the first study to study parent-child interaction during computer use. We find that:

Child Clickers

1. Spent significantly more time on the game
2. More parent verbalizations related to computer mechanics

Child Non-Clickers

1. Spent significantly less time on the game
2. Parent verbalizations related to questions about the story

Discussion and Implications

Control of a computer mouse is an essential skill for children to master independent computer use. While some parents create scaffolds that foster computer mouse skills, others create scaffolds that focus more on story comprehension, as if reading a traditional story book. Since there are no differences in story comprehension for young children who are either clickers or non-clickers for content that is reasonably comprehensible, parents may want to teach basic computer mechanics in such instances to enable their child to have more autonomous online interactions.

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