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Honor's Thesis Proposal: Effects of Tactile versus Electronic Games on Attention, Distraction, and Understanding

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Effects of Playing Computerized versus Tactile Learning Games on Preschoolers' Attention Skills and Comprehension: A Pilot Study

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Background Information

- 27% of young children regularly use a computer (average 50 minutes a day) (Vandewater et al., 2007).
- Little research has been done on whether or not playing learning games in this computerized format vs. a traditional tactile format is more beneficial for children's learning.
- We are interested in two particular learning constructs important for children's adaptation to the schooling environment: sustained attention, or the ability to focus on a task without distraction, and rule comprehension, or the ability to understand the game with a low error rate.
- Research suggests that attention is important because there is a positive relationship between sustained attention and performance on a problem solving task in toddlers (Choudhury & Gorman, 2000).
- Research also suggests early comprehension of the social and physical world is one of the strongest predictors of later reading and science success (Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010).

Purpose of the Study

The purpose of this study is to evaluate the impact of computerized and tactile learning games on children's attention and comprehension skills.

Method

- 10-20 preschool aged children and their parents will participate in this study.
- Participants will play the Linear Numbers Board Game with their parents, developed by researchers Siegler and Ramani (2009), which has been shown to enhance children's understanding of the mental number line.
- Children will be randomly assigned to one of two conditions, computerized (playing the game on the computer), or tactile (playing the game as a board game).
- The children's attention and comprehension will be measured by videotaping and coding the children's behaviors.
- Attention will be coded by the number of seconds children hold their attention on the game and the number of times they look away from the game. Comprehension will be coded by the number of errors each child makes during the game.

Hypotheses

- There is mixed research on the effects of electronics on children's attention.
- For instance, one study found that in adolescents, electronic media use may benefit certain aspects of attention, such as visual processing, but may be associated with an overall increase in attention problems (Swing, 2013).
- There is less known about the associations between playing computerized learning games and attention in younger children. Therefore, I hypothesize that the computerized format vs. the tactile format of the game will have an effect on children's attention. However, the direction of the effect is undetermined.
- Other research suggests children learn the best when they use their dominant senses, seeing, hearing and touching (Walker-Tileston, 2004 in Higgins & Hall, 2005)
- Therefore, I hypothesize that children will have greater comprehension of the game when it is presented in a tactile format, because they can use more of their senses to interact with the game.



Linear Numbers Board Game