Accuracy and Transfer in Associating Virtual and Embodied Toys

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Research Objective

This study focuses on whether or not young children transfer what they learn about a toy character from one setting to another (e.g. stuffed animal to computer game) and whether the interactivity of the toy and/or the age of the child has an effect. This study explores the following two questions: 1) How are children's abilities to accurately link information to a toy character affected by the interactive nature of the toy? 2) Does the child's age influence the information they generalize between media? Young children's understanding of the relation between video and reality is far from complete (DeLouche, 1995, Melzoff, 1988), and there is high possibility that several factors may influence the transfer of information from one setting to another (Holyoak & Spellman, 1993). Thus if we want to prevent young children from conflating media and reality, it will be necessary to find explicit ways to help them mark the differences.

Methods, Measures and Procedure

Fifty-six children Fifty-six children (33 to 67 months) have participated in this study. Children are divided into two groups: younger (33 to 51 months), and older (52 to 67 months). This study includes a two-by-two mixed model design. The within-subject comparison is environment (static versus dynamic), and between-subject comparisons are age (younger versus older) and toy type (interactive versus non-interactive). The children are assigned to one of two conditions: interactive or non-interactive. The children learn facts about a toy dog presented through varying levels of technology and interactivity (e.g. video game, stuffed animal, picture books). They then meet a similar dog character in a new medium (e.g. as a stuffed animal if first sees the dog as video character). The child plays in two different mediums (static and dynamic) and is given a different toy in each medium. During the interview, the researcher shows the first toy and asks a total of 8 questions (4 facts from the first toy, and 4 facts from the second toy) while showing the first toy (e.g. name). Next, the researcher brings out the second toy, and again asks the 8 questions. The questions overlap in content. The two dependent measures are accuracy and transfer. The accuracy measure evaluates the child's memory in relation to a specific toy. The transfer measure sees if children take information from one toy and apply it to another. This enables us to ensure that the lack of transfer is not due to a lack of memory. Accuracy is obtained by the sum of correctly remembered facts associated with the right toy. The transfer score is obtained by the number of facts associated with the wrong toy. Thus, a child who remembers all 8 facts for toy 1 and all 8 facts for toy 2, will set an accuracy score of 8(2 toys x 4 facts), but also a transfer score of 8. For Toy 1, if a child only answers the 4 questions, associated with that toy, and for toy 2, the child only answers the 4 questions associated with that toy, the child would receive an 8 for accuracy and a zero for transfer.

Results

There is a significant Age by score (accuracy vs. transfer) interaction ($F = 13.2$, $p < .05$). Older children have a higher accuracy and a lower transfer score. Little difference is found between the two measures in younger children. Results indicate a significant relationship between children's accuracy scores and age ($r = .281$, $p < .05$). However, there was little correlation between age and transfer ($r = -0.7$). The older children did not confuse the two toys, showing lower transfer scores. Younger children remember less and may have less to transfer. Younger children either perceived the two toys as being equal or had difficulty distinguishing between the two toys. This study found that younger children are more likely to assume a similarity across contexts than older children, and that the specific media did not change this pattern.

References

DeLouche, J. S.(1995). Early symbol understanding and use of symbols. In D.Medin (Ed.), *The psychology of learning and motivation Vol.33*, (pp.65-114). New York: Academic Press.

Holyoak, K. J. & Spellman, B.A. (1993). Thinking. *Annual Review of Psychology, 44*, 265-315.

Melzoff, A. N.(1988). Imitation of televised models by infants. *Child Development*, *59,* 1221-1229.