

Turning observation into action:

Infants learn to solve a manual search task through brief visual experience

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Abstract

Recent research suggests that when watching covering events in which a solid cover is lowered over an object, infants typically do not attend to information about the relative heights of the covers and object until they are about 12 months of age. At this age, infants begin to succeed in retrieving a tall object by searching under a tall but not a short cover. The present research asked whether it would be possible to teach infants at a younger age to attend to and use height information in a manual search task. Experiment 1 shows an age effect that 12- but not 9-month-old infants considered height information and succeeded in the search task. In Experiments 2 and 3, we used visual events to teach 9-month-old infants to use height information, with positive results. After watching a series of teaching events, the 9-month-old infants in Experiments 2 and 3 succeeded in searching for a tall object under a tall but not a short cover, suggesting that they are able to convert visual learning into manual action.

Introduction

When watching an event, infants typically attend to information about a variable they have identified as relevant for predicting the outcome of the event. Recent reports indicate that infants begin to identify the variable height as relevant for covering events at about 12 months of age. As a result, younger infants are not able to detect a violation when a tall object comes fully hidden under a short cover (e.g., Wang, Baillargeon, & Patterson, 2005), and they would search under a short cover for a tall object (e.g., McCall, 2001). A visual training procedure has been used to successfully teach 9-month-old infants to identify the variable height in covering events and to detect a violation pertaining to the variable (Wang & Baillargeon, 2005). In the present research, we examined whether the same visual training procedure can guide infants to use height information and succeed in a manual search task several months earlier than they would without training.

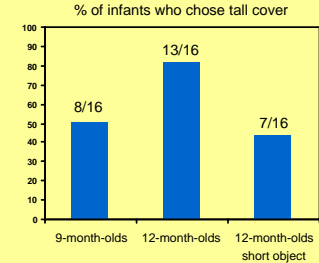
Experiment 1

Infants at 9 months ($n=16$, $M=9.8$) and 12 months ($n=16$, $M=12.15$) received a manual search task.



The manual search task: infants were first shown two covers (one tall and one short) and a tall object; the tall object could be fully hidden under the tall but not the short cover. An experimenter then put up a screen to hide the three objects. When the screen was removed, only the two covers were present. Finally, the experimenter encouraged the infants to search for the hidden object.

In a control condition, another group of 12-month-old infants ($n=16$, $M=12.20$) received a similar search task with a short object that could be hidden under either cover. Only 44% of the infants chose the tall cover, suggesting that the 12-month-olds' success was not due to their intrinsic preference for tall covers.



Conclusions

Infants younger than 12 months of age typically fail to attend to height information when watching covering events. In Experiment 1, 12- but not 9-month-old infants used height information to succeed in a manual search task. However, previous research suggests that it is possible to teach infants to attend to and use height information several months earlier (Wang & Baillargeon, 2005). The 9-month-olds in Experiments 2 and 3 succeeded in the manual search task, after watching a series of teaching events. This result is consistent with prior experiments in which 11-month-old infants were successfully taught a new variable in support events (Baillargeon, 2002). Furthermore, the present research demonstrates that infants as young as 9-months are capable of turning visual learning into manual action.

References

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Acknowledgements

We thank Renée Baillargeon and Dom Massaro for helpful comments, the research staff at the UCSC Infant Development Lab for their help with data collection, and the parents and infants who participated in this research.

Presented at the biennial meeting of the SRCD, Atlanta, GA (2005, April).

Experiment 2

A group of 9-month-old infants ($n=16$, $M=9.8$) were first given the search task as in Experiment 1, and then received a teaching session in which they watched three pairs of covering events (following Wang & Baillargeon, 2005).



9-month-olds, pre-teaching:
8/16 (50%) succeeded.

The teaching events: A gloved hand rotated a cover to show its hollow interior, and then placed the cover on the floor next to the object. After a pause, the hand lifted the cover and lowered it over the object. The event was conducted in reverse and repeated until the trial ended.

Each infant first saw 3 pairs of teaching events in which covers of varying heights were lowered over an object. (The first pair is shown below.)

Tall-cover Teaching Event



Short-cover Teaching Event



Finally, the infants received a similar search task using a different object. This new object could be fully hidden under the tall but not the short cover.



9-month-olds, post-teaching:
13/16 (81%) succeeded.

Experiment 3 (Replication of Experiment 2)

Another group of 9-month-old infants ($n=16$, $M=9.19$) first received the same teaching session as in Experiment 2, then the search task.

81% of the infants chose the tall cover when attempting to search for the tall object. This provides additional evidence that 9-month-old infants are able to visually learn and manually apply new physical knowledge.

Tall-cover Teaching Event



Short-cover Teaching Event



9-month-olds, post-teaching:
13/16 (81%) succeeded.