Five-Month-Olds Detect Changes with Contextual Support

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Introduction

Research suggests infants learn about the physical world through rule learning[1] and through the support that the environment provides (contextual support). Contextual support is visual support that the environment provides, such as a reference point or standard infants can use to compare relevant object features (i.e. height) [2,3].

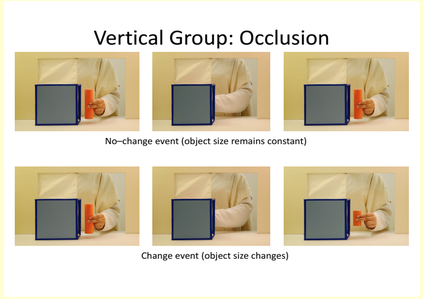
Infants form distinct event categories and learn about each category separately[4]. As a result, they may fail to use the same object information across events. For example, 5-month-old infants use height information in occlusion events but fail to use this same information for containment events[5,6].

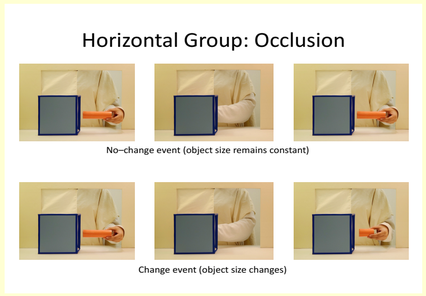
Existing work has examined rule learning and contextual support separately, whereas few studies have examined how these two processes work together. The present study examined whether increased support in the environment facilitated infants' use of information. More specifically, does allowing for comparison facilitate the use of height information in containment events?

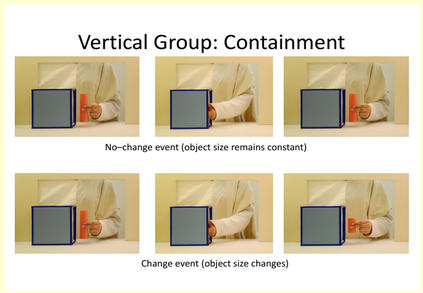
Method

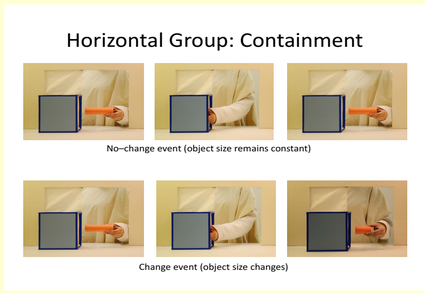
Participants included 56 infants (*M* age = 5 months, 3 days). Infants were randomly assigned to a vertical group or a horizontal group. Within each group, half saw occlusion and half saw containment events. Infants received two test trials: a change trial (object changed size) and a no-change trial (object size remained constant).

At the start of each trial, a tall object was held next to a box. The object was then moved behind the box (occlusion condition) or inside the box (containment condition). The object was held next to the box in either a vertical or horizontal orientation. When the object was held vertically next to the occluder or container (the box), the rims of the occluder or container naturally served as a means for comparison. This allowed infants to use relative information about the height of the object. We predicted that this additional contextual support would enhance infants' ability to use height information.





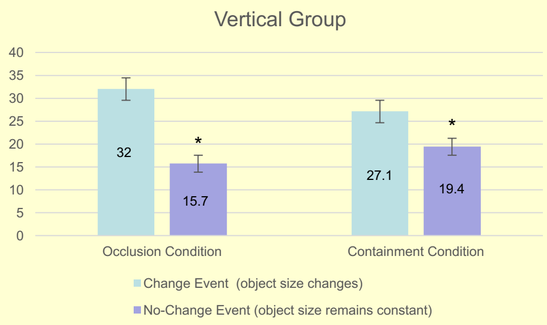




Results

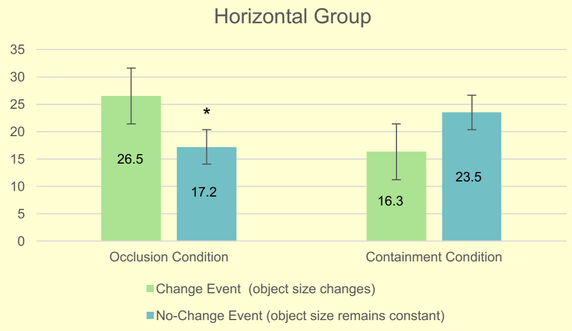
The infants in the vertical group detected the change in both the occlusion and containment conditions. Infants in the occlusion condition looked significantly longer at the change (*M* = 32.0 s) than the no-change (*M* = 15.7 s) event, $F(1, 26) = 20.63$, $p = .001$. Similarly, infants in the containment condition looked significantly longer at the change (*M* = 27.1 s) than the no-change (*M* = 19.4 s) event, $F(1, 26) = 4.60$, $p = .041$.

Holding the object vertically allowed the infants to use the rims of the opening as a reference point. We no longer see the gap in five-month-olds' performance across occlusion and containment.



For the horizontal group, only the infants in the occlusion condition detected the change, looking significantly longer at the change (*M* = 26.5 s) than the no-change (*M* = 17.2 s) event, $F(1, 26) = 6.55$, $p = .017$. However, in the containment condition, infants' looking times at the two events were not significantly different, $F(1, 26) = 4.01$, $p = .06$.

By 5 months of age, infants have learned the rule that object height is important for occlusion events; therefore, they detected the change without contextual support. However, without this additional support, the 5-month-olds who have not learned the rule for containment failed to detect the change in object height in the containment condition.



Conclusion

These results support that multiple mechanisms could be at work when it comes to learning about the physical world. Both rule learning and contextual support play a role in infants' processing of physical events. No doubt infants engage in rule learning as many previous studies have shown. The present work demonstrates that increasing the contextual support can give infants a little nudge in the right direction, helping them get closer to using relevant information.

It is important to recognize these two processes (rule learning and contextual support) are intertwined and that both appear to be playing a role in infants' ability to use relevant information. The support the environment provides, contextual support, is present during rule learning. The environment is often set up in a way that draws infants' attention to relevant information. Children who have not yet acquired abstract rules can still process physical events adequately with increased contextual support that the environment provides.

References

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