



How does recognition-induced forgetting in children appraise the instructional method of schema activation?

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Introduction

Encouraging children to activate an existing concept (sometimes referred to as *prior knowledge*) is a popular educational method used to facilitate the learning of new information. However, there is considerable evidence that accessing memory representations can actually impair related memories (Anderson, Bjork, & Bjork, 1994). Specifically, retrieval-induced forgetting shows that retrieving a subset of a concept actually impairs memory for the rest of the concept. Indeed, retrieval-induced forgetting has been shown with children (e.g., Aslan & Bäuml, 2010; Conroy & Salmon, 2005; Ford, Keating & Patel, 2004). Exploring a similar memory impairment for items in visual long-term memory is particularly important for children because visual representations are especially useful for storing a plethora of information relevant to children (e.g., “egg”, “chick”). In the present study, we examined recognition-induced forgetting (Maxcey & Woodman, in press) in children to address whether a concept-related memory impairment, similar to retrieval-induced forgetting, exists in visual long-term memory of children ages 6-10.

Predictions

- Children will show both the benefit and the cost of recognition-induced forgetting, calling for caution in the pedagogical method of concept activation during the presentation of new material.
- A consequence of recognition practice for children would be a significant detriment in the ability to correctly reject novel objects from non-practiced categories relative to novel objects from practiced categories, suggesting that experience with one concept affects the child's ability to correctly identify novel items from other categories.

General Method

Block 1: Study

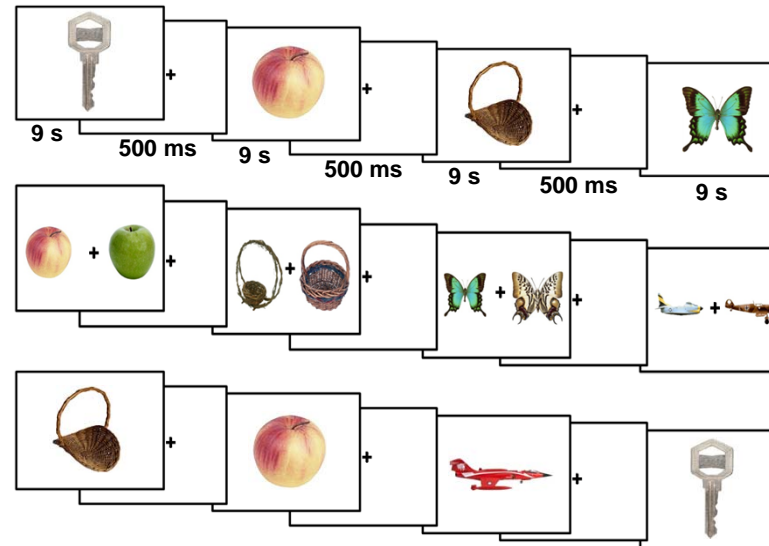
45 children, 6-10 years old, were shown 6 objects belonging to 6 categories (36 objects total). Participants were instructed to study the visual details of these items for a later test.

Block 2: Recognition Practice

One of the objects was an object from the study block. The other object was a novel object from the same category. Participants were instructed to determine which of the items they had seen in the first block and respond by button press.

Block 3: Test

Participants were shown one object and asked if they have ever seen the exact image previously in the experiment. Half of the items were new and half were old.



Conclusions

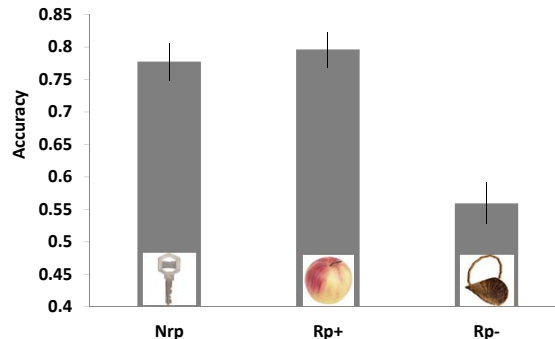
Children exhibited the cost for non-practiced objects belonging to practiced categories usually demonstrated in these paradigms, but not the benefit for practiced objects. Upon analyzing the data for the oldest participants, it was clear that the lack of a benefit for practiced objects was driven by the younger participants, and that the benefit found in young adults (Maxcey & Woodman, in press) was emerging for 9 and 10 year old participants.

Children showed reliably less correct rejections for novel objects from non-practiced categories.

The cost for Rp- items in the face of no benefit for Rp+ items for 6 – 8 year olds suggest that successive instances of recognizing an object inhibited previous members of that category, and only enhanced memory for the objects themselves at later ages (9-10 years of age).

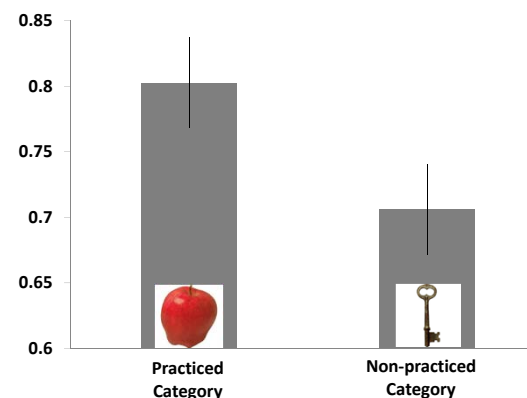
These findings of a concept-related memory impairment for children using visual stimuli advise against activating background knowledge when introducing new material. This method commonly employed to help children remember new information may in fact be impairing memory and indicates the need for further exploration of the nature of this forgetting.

Basic RIF Effect



- Cost for non-practiced objects from practiced categories (Rp-, 56% < Nrp, 79%), $t(44)=5.62, p < .001$.
- No benefit for practiced objects from practiced categories (Rp+, 78% = Nrp, 79%), $t(44)=0.48, p=.673$.
- The oldest children (9 and 10 year olds) showed a 13.1% advantage for practiced items (Rp+, 90.4%) over items from non-practiced categories (Nrp, 77.3%), $t(13)=1.99, p=.068$.
- The youngest children (6-8 year olds) showed a 5.3% cost for practiced items (Rp+, 74.7%) relative to items from non-practiced categories (80.0%) found in children aged 6-8, $t(30)=0.701, p=.489$.

Novel Items



- Correct rejections of test lures from non-practiced categories (71%) were significantly lower than correct rejections of test lures that were members of a practiced category (80%), $t(44)=3.06, p=.004$.
- The error bars show the 95% within-subjects confidence intervals.

References

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