Preschoolers’ Memory for Distinctive Information

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Introduction
The “von Restorff” or “isolation” effect occurs when better memory is exhibited for an item that appears salient or distinct relative to items that are categorically similar to each other (Hunt, 1995).

An item appears salient when individuals process the differences (i.e., distinctive processing) between a unique item relative to similarly organized items (i.e., organizational processing, Hunt & Lamb, 2001).

The isolation effect has not been observed in preschoolers for conceptually distinct information, but this may be due to changes in methodology:

- Howe, Courage, Vernescu, and Hunt (2000) found no isolation effect when children were presented pictorially with three isolates (i.e., perceptual, conceptual, and numerical) amidst 8 items from the same category. However, multiple isolates may make it difficult to discern the background context and may increase distinctiveness processing of all items reducing salience of the isolates.
- Marcovitch, Hunt, and Lange (2006) also found no memory benefit for distinctive information when children were asked to recall a conceptual isolate placed late in the pictorially presented list immediately after list presentation. However, the lack of delay between list presentation and recall may result in a recency effect, which would lead to increased recall of both the isolate and control items.

The goal of the current study was to determine whether children younger than 6 years of age produce the isolation effect for a conceptual isolate in a more traditional paradigm. Specifically, there was only one isolate within a list and there was a 5-minute delay before recall. Demonstration of an isolation effect would indicate that children spontaneously process information in an organizational and distinctive manner, whereas the lack of an isolation effect would suggest difficulty simultaneously processing differences relative to distinctive information while organizing background information.

Participants
Forty-three 4-year-olds (M age = 4.58 years, SD = .27), 49 5-year-olds (M age = 5.45 years, SD = .38), and 47 6-year-olds (M age = 6.05 years, SD = .33) participated in the study.

Method
Children were presented with two six-item picture lists from the categories of animals, foods, vehicles, or clothes.
- In the Isolation List (Figure 1), the target item was categorically different compared to background items.
- In the Control List (Figure 2), all items (including the target) were from the same category.

The order of list presentation was counterbalanced. Categories were not repeated between lists for an individual child. Target items were always presented in the fifth position.

One child’s isolate item (Figure 1) was presented as another child’s control item (Figure 2).

For each list, the experimenter presented the picture cards one at a time and asked children to name the picture. If they labeled the picture incorrectly or failed to produce the label, children were told the name of the picture and asked to repeat it.

After presentation of list 1, there was a 5-minute delay followed by a free recall period.
- There was a delay of at least 5 minutes before the presentation of list 2.

Results
- A mixed analysis of variance (ANOVA) was conducted on children’s recall of the critical target item with target type (control vs. isolate) as a within subjects variable and age group as a between subjects variable.
  - A marginal effect of target type, F (1, 136) = 3.03, p = .08, revealed that a higher percentage of children recalled the control item compared to the isolate item.
  - An age group by target type interaction, F (2, 136) = 2.47, p = .09, was also marginally significant.
    - Within subjects planned comparisons revealed better memory of control items over the isolate item for the 4-year-olds, t(42) = 2.49, p = .02, but not for 5- or 6-year-olds, both ts < .47, ps > .64 (see Figure 3).
  - Output position of the target item was also analyzed, as items salient in memory should come to mind more rapidly. A mixed analysis of variance (ANOVA) was conducted on output position of the target item with target type (control vs. isolate) as a within subjects variable and age group as a between subjects variable. Scores ranged from 1 to 7 with 6 being the last output location and 7 assigned when the target item was not recalled.
    - A marginal effect of target type, F (1, 136) = 3.25, p = .07, indicated that the isolate item was recalled later in free recall than the control item.
    - An age group by target type interaction, F (2, 136) = 3.43, p = .04, was also significant.
      - Within subjects planned comparisons revealed that the isolate was recalled later than the control item for 4-year-olds, (42) = 2.56, p = .02, but not for 5- and 6-year-olds, both ts < .67, ps < .39 (see Figure 4).

Discussion
- Young preschoolers are actually less likely to recall information meant to be distinct.
  - This finding is consistent with research demonstrating that the necessary organizational (e.g., Schwenc, Bjorklund, & Schneider, 2009) and distinctive processing strategies (e.g., Ornstein, Hale, & Morgan, 1977) are developing in early preschool.
- Young preschoolers also recall the isolate item later compared to the control item.
  - Failure or late recall of the isolate may indicate that young children initially concentrate on organizational processing by focusing on recalling and grouping similar items first.
  - Organizational processing is typically spontaneous in adults but may be more effortful in children (Schwenc et al., 2009). The focus on effortful organizational processing may not allow children to engage in or benefit from distinctiveness processing of the isolate item relative to the organized context.

References