

# Self-reference encoding and incidental recall by children

JOHN A. HALPIN, C. RICHARD PUFF,  
HEATHER F. MASON, and SUSAN P. MARSTON  
*Franklin and Marshall College, Lancaster, Pennsylvania*

**Free recall of trait-descriptive adjectives by children in kindergarten, first grade, and fourth grade was studied within an incidental-memory paradigm. Performance was compared after three different orienting-task/encoding questions: "Does this word describe you?" (self-reference), "Is this a nice word?" (semantic), and "Does this word have an 's' sound?" (physical). The trait-recall task was nondiscriminatively difficult for the kindergartners. Recall in the self-reference condition increased over age, and by the fourth grade, the children showed an adult pattern of greater recall in the self-reference condition than in the other two conditions.**

This paper presents an exploratory investigation of the effectiveness of a self-reference orienting task as an encoding activity for children. The superiority of this task over other types of semantic orienting activities has been demonstrated for adults in the incidental learning paradigm in a number of studies (e.g., Keenan & Baillet, 1980; Rogers, Kuiper, & Kirker, 1977). Rogers et al., for example, found greater incidental recall following a task in which subjects were asked to judge whether trait adjectives described themselves than one in which they made judgments on the basis of semantic meaning or physical characteristics of the words. They interpreted their results as demonstrating the power of the self-schema for the encoding and subsequent retrieval of information. Changes in the nature of the self-concept over the childhood years, as documented, for example, by Fahey and Phillips (1981), suggest that the effectiveness of self-reference as an encoding device might show developmental changes as well. Consequently, an incidental-memory paradigm similar to that of Rogers et al. was used here with children from kindergarten to fourth grade.

## METHOD

### Stimulus Items

The stimulus items comprised 36 trait-descriptive adjectives (e.g., pretty, happy, tall, quiet), approximately half of which occurred in Entwisle's (1966) norms and half of which were generated by the experimenters. The adjectives were selected so that none appeared to have strong negative connotations attached to them. Approximately one-third of the items contained an "s" sound, and all of them were confirmed by the teachers

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to be in the vocabularies of the children. Two lists of 12 items were constructed to minimize as much as possible the inclusion within the same list of both obvious synonyms and antonyms. Each subject received one of the two sets of 12 items plus two randomly selected additional items placed at the end of the list to serve as recency buffers.

### Orienting Tasks

The orienting tasks consisted of asking the child one of three questions before the presentation of each adjective. In the self-reference condition, the child was asked whether the word (that would follow) described him or her; in the semantic orienting-task condition, the child was asked whether the word was a "nice" word; and in the physical orienting-task condition, the question was whether the word contained an "s" sound. These semantic and physical orienting tasks were patterned after those used by Murphy and Brown (1975). For the first 12 items in the list, the orienting questions were randomized in blocks of three, such that, for each sequence of three adjectives, the child was asked each question once. Two of the questions were selected randomly for application to the 2 recency buffer items. Finally, the order of the adjectives was randomized for each subject so that there was no correlation between orienting-task questions and specific items over subjects.

### Procedure

The children were tested individually by one of three experimenters. They were told that they would be asked some questions about different words and that they were to answer each question either by saying "yes" or "no" or by nodding their heads. Emphasis was placed on the fact that there were no right or wrong answers and that the children were free to quit at any time. They were given a sample test in which they were asked each orienting question with a practice adjective. When the children clearly understood the instructions, the list was presented orally one time. After the presentation, the children were asked to tell the experimenter all the words they could remember. One minute was allowed for recall, followed by one or more encouragements to try to remember additional items. Finally, the children were asked if they had expected the recall test and were debriefed.

### Subjects

The children all attended a suburban, public school. After exclusion of those subjects who had anticipated the recall test, there were 14 kindergartners [mean age = 6 years 1 month (6-1), SD = 5.21 months], 11 first-graders (mean age = 7-0, SD =

5.33 months), and 24 fourth-graders (mean age = 10-2, SD = 5.35 months). The three groups comprised approximately 43%, 45%, and 75% females, respectively.

## RESULTS

The number of items correctly recalled was determined for each subject. The count of correct items did not include occurrences of the two recency buffer items, items from the examples given in the instructions, or intrusions of words not in the list. The alpha level was set at .05 for all analyses, and, in order to simplify the presentation, only significant results are reported. There were no main effects of sex or list, and they did not interact with any other variables. Consequently, all further analyses were collapsed across these two variables.

A 3 x 3 analysis of variance, with grade as a between-subject factor and orienting task as a within-subject factor, was performed on the number of items correctly recalled. The relevant means are shown in Table 1. There were significant main effects of grade [ $F(2,45) = 33.43$ ,  $MSe = 0.65$ ] and orienting task [ $F(2,92) = 11.12$ ,  $MSe = 0.58$ ]. The grade x orienting task interaction was also significant [ $F(4,92) = 4.34$ ,  $MSe = 0.58$ ].

The results of simple effects analyses revealed that, for the kindergartners, there were no significant differences among the mean correct recall scores under the three orienting-task conditions (self-reference: mean = 0.21; semantic: mean = 0.29; physical: mean = 0.21). For the first-graders, recall was significantly greater with the semantic (mean = 1.73) than with the physical (mean = 0.64) orienting task [ $F(2,20) = 7.74$ ,  $MSe = 0.97$ ], but recall with the self-reference task (mean = 1.27) was not significantly greater than that with either of these two orienting tasks. For the fourth-graders, however, recall with the self-reference task (mean = 2.25) was significantly greater than that with the semantic task (mean = 1.67) [ $F(2,46) = 18.47$ ,  $MSe = 0.62$ ], which, in turn, was significantly greater than that with the physical task (mean = 0.87) [ $F(2,46) = 14.44$ ,  $MSe = 0.62$ ].

Newman-Keuls post hoc tests indicated that there was no significant improvement in recall across grades with the physical orienting task. With the semantic task, however, recall by the kindergartners was significantly less than that by the first- and fourth-graders, with recall

in the latter two grades being equivalent. Finally, with the self-reference orienting task, recall in all three grades differed significantly, with that of the kindergartners being the lowest and that of the fourth-graders being the highest.<sup>1</sup>

## DISCUSSION

The three orienting tasks had no significant effect on recall by the kindergartners. Although inconsistent with previous findings of greater recall of semantically than of physically processed items by children at this age level (e.g., Murphy & Brown, 1975), the present results appear to involve a floor effect, inasmuch as over half of the kindergarten subjects did not recall any items correctly. This nondiscriminatively low level of recall may well have been caused by the fact that the stimulus items here were trait-descriptive adjectives, whereas concrete nouns and pictures have been used in previous studies. Some adjectives may have been available in memory, but due to their relative lack of image-arousing capability, they remained inaccessible because there was not enough imagery present to help cue their retrieval (e.g., see Paivio, 1969). At any rate, the kindergartners did not recall much regardless of the processing condition, and their results will not be discussed further.

Both the first- and fourth-graders recalled significantly more with the semantic than with the physical orienting task. These findings corroborate the results of numerous other studies with adults and children (e.g., Ghatala, Carbonari, & Bobele, 1980; Lindberg, 1980). Another expected result was that there was no improvement over grades in the amount of recall in the physical orienting-task condition. Encoding in this condition is expected to be limited to a shallow level in Craik and Lockhart's (1972) terms, or to be restricted to only a few attributes in Lindberg's view. In either case, the richer semantic knowledge bases of the fourth-graders should not come into play in this task. An increase in recall from first grade to fourth grade would, however, be expected in the semantic orienting-task condition. Assuming some growth in the richness of the knowledge base, semantic or deep processing should tap this structure and result in increased recall for the older children. In the semantic orienting-task condition in the present study, however, the fourth-graders did not recall any more than the first-graders. There does not appear to be any immediately obvious explanation for this finding. It is possible that the avoidance of items with strong negative connotations makes the question of whether an item is a "nice" word a less effective encoding device than it might otherwise be.

Recall in the self-reference orienting-task condition showed significant improvement across the age range studied here. Furthermore, for the first-graders, the amount of recall in this condition was no greater than that in the semantic and physical processing conditions, whereas by the fourth grade, the children recalled significantly more in the self-reference condition than in the other two. The pattern shown by the fourth-graders is thus the same as that found with adults by Rogers et al. (1977). These results also appear to corroborate Fahey and Phillips's (1981) conclusion that there is a strengthening and an increase in the complexity (i.e., an increase in the number of dimensions represented) of the self-concept across the middle childhood years. The present results thus might be interpreted by the invocation of an increasingly well-defined self-schema, by the greater spread of encoding afforded by the increased richness of those aspects of the semantic knowledge base pertaining to personal experience, or by the distinctiveness of the cuing provided by relating items to increasingly separate "dimensions" of the self-concept. However, further consideration of any such theoretical issues should await replication and/or extension of these tentative findings.

Table 1  
Mean Number of Items Correctly Recalled as a  
Function of Orienting Task and Grade

| Grade        | Orienting Task |          |                |
|--------------|----------------|----------|----------------|
|              | Physical       | Semantic | Self-Reference |
| Kindergarten | 0.21           | 0.29     | 0.21           |
| Grade 1      | 0.64           | 1.73     | 1.27           |
| Grade 4      | 0.87           | 1.67     | 2.25           |

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## NOTE

1. Recall of items to which the children answered "yes" or "no" (meaning, e.g., that an item did or did not apply to them) was not analyzed here as it has been in most of the adult studies. One reason is that "yes" versus "no" ratings have not led to consistent differences in the adult literature, and it would have been hard to tell what any particular outcome meant in the present study. What was found, however, was that children responded "yes" to most of the items in the self-reference condition. This was due perhaps to the fact that items with clear negative connotations were excluded from the stimulus materials because there did not seem to be anything to gain in this exploratory study by possibly making salient any negative dimensions of the child's self-concept. As the results turned out, it appears that the essential point of the study was made without having to do this.

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