Effects of Metaphors on Children’s Comprehension and Perception of Print Advertisements

Donna R. Pawlowski, Diane M. Badzinski, and Nancy Mitchell

In an experiment, children in three grade levels (second, fourth, and sixth) viewed four advertisements. The children were shown advertisements with either metaphors in both pictorial and verbal form or a literal equivalent. The sixth graders interpreted more metaphors correctly than the fourth and second graders. In terms of recall of advertised content, the sixth and fourth graders recalled brand names, products, and additional copy better than the second graders. Within each grade level, metaphors did not enhance children’s recall of advertised content or perceptions of the understandability of the advertisements and liking of the advertised products. The authors speculate that metaphors are most likely to enhance recall under conditions in which the metaphor serves as a direct representation linking the metaphor to the advertised product. Their findings suggest that advertisers should be aware that young readers may have difficulty interpreting metaphors and that metaphors may not be more effective in terms of children’s recall and perception of understandability than literal versions of advertisements.

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In a recent issue of Sport Illustrated KIDS, a magazine targeted to boys and girls eight to 14 years of age, a Coca-Cola advertisement pictures a sand volleyball game with the caption, “ALWAYS THE BEST SERVE ON THE BEACH.” In the same magazine is a Skittles advertisement with the caption, “TASTE THE RAINBOW,” and an illustration of a rainbow. Metaphors abound in advertisements aimed at children and youth. Do children understand the metaphors? Are there age differences in children’s ability to understand metaphors? Are there age differences in children’s ability to understand advertisements? Does gender make a difference in how children interpret advertisements? We address those questions by exploring age and gender differences in children’s ability to interpret metaphors and the extent to which metaphors aid in recall of advertisement content.

Literature Review

Metaphors

Scholars argue that metaphors play an important role in how individuals make sense of their world (Baxter 1992; Black 1962; Koch and Deetz 1981; Ortony 1979). A metaphor is a common linguistic tool in which the qualities of one object are transferred to another. Though traditionally metaphors are defined as a figurative language structure (Jones and Stone 1989), they are also conceptualized as a “figure of thought” (Lakoff and Johnson 1980). Lakoff and Johnson define metaphors as “understanding and experiencing one kind of thing in terms of another” (p. 5).

Lakoff and Johnson also conclude that our meanings become solidified into patterns that create our perception of how we understand reality. What we do and think in language daily is metaphorically laden. Pugh (1989) argues that the metaphor is so much a part of our thinking and learning processes that we may not realize how important it is in our daily lives. Hence, metaphors not only act as a linguistic figure of speech, but also are used for cognitive understanding of language and the world around us.
To what extent are children able to understand metaphors? Is a child who calls the sun a fireball creating a metaphor or just expressing how one physical object looks like another? Can the child who calls the sun a fireball explain the similarities and differences between the two? Scholars have various opinions about the extent to which children use and comprehend metaphors. However, careful analysis suggests that the contradictions in research are not necessarily about whether children understand metaphors, but the degree to which they understand and comprehend metaphors.

Johnson and Pascual-Leone (1989) examined metaphor research and identified some general results from previous studies. Children at 11 and 12 years of age can interpret reliably most types of metaphors, even ones that are fairly precise and abstract. Nine- to 10-year-olds seem to be in a transitional stage in which they can understand metaphors based on direct physical resemblance, but their understanding appears to be more global than that of older children. Children seven and eight years of age can process metaphors based on physical resemblance, but not those with other grounds. Younger children have problems interpreting most standard metaphors, and only with facilitation of the task can they partially understand physical- or action-based metaphors (Johnson and Pascual-Leone 1989). Patterns of metaphor understanding seem to indicate that older children have more abstract thinking abilities to understand metaphors, which reflect a higher level of cognitive development. What theoretical explanation can be offered for age-related differences in metaphor comprehension? Undoubtedly the most predominant theory for explaining metaphor comprehension is Piaget's theory of cognitive development.

Cognitive Development

Piaget's theory is the most comprehensive for intellectual development because it addresses all levels of education and provides a broad timetable for reaching formal operational thinking, which is the main goal of all cognitive processes (Ault 1983). Piaget's theory posits four main developmental stages. Sensorimotor is the first stage, which takes place roughly from birth to the age of two and consists of simple perceptual, reflexivity, and motor activities (Gage and Berliner 1996). The second stage is the pre-operational stage, between the ages of approximately two and six or seven years, in which mental representations are formed (Piaget 1962, 1967; Piaget and Inhelder 1973). Language formulates during the pre-operational stage and the meaning of words becomes stable; however, the name of an object is seen as such an integral part of the object that changing the name changes the object (Ault 1983). Children in that stage have mental representations and a basic understanding for a single division of objects, but cannot combine classes (e.g., physical features such as size, color, and shape) and cannot differentiate one class from another at the same time.

In the concrete operational stage, between the ages of six or seven and 11 or 12 years, mental representations can be reversed and simple simultaneous operations can be performed (Piaget 1967). Children can do a variety of tasks and solve problems through trial and error, but will not engage in multiple problem-solving techniques or abstract thought processes (Ault 1983). For example, a child solving a problem will be content with the first solution, regardless of whether other solutions are just as feasible. The final stage is the formal operational stage, between the ages of 11 and 14 years, in which operations are coordinated and applied to abstract reasoning (Ault 1983; Gage and Berliner 1996; Piaget and Inhelder 1973). Inquiry is applied to abstract and hypothetical problems of higher-ordered thinking.

Piaget's stages of development help us to understand how children comprehend information. As age and stage evolve, so do memory and ability to perform more complex cognitive tasks. Cantor and Nathanson (1996) indicate, however, that the stage changes are gradual and that developmental changes are rough age trends, not sharp and clear breaking points. Hence, researchers can associate certain age or grade levels with rough estimations of cognitive processes. As it is difficult to pinpoint exactly when each child will undergo cognitive changes, researchers must recognize that results generated represent approximate cognitive stages.

Some researchers disagree with Piaget's view and argue that young children are capable of comparing items belonging to different conceptual categories (Vosniadou et al. 1984; Winner, Engel, and Gardner 1980). The general assumption is that preschool and elementary-school children are capable of understanding metaphorical expressions if the meaning of the metaphor is within the child's experiences and if sufficient information is provided to aid metaphor interpretation (Meadows 1993; Vosniadou 1987; Vosniadou et al. 1984; Waggone and Palermo 1989). Vosniadou and Ortony (1983) found that young children were able to attribute meaning to metaphors, but not al-
ways the complete and accurate meaning of the whole context. Palermo (1989) indicates that such a finding does not necessarily negate Piaget's theory, but does caution researchers to look more closely at the knowledge from which children identify metaphors. He argues that children may have difficulty distinguishing between metaphors and more literal comparisons. A child may use a term not normally applied to an object without necessarily intending a metaphor. For example, children sometimes use a pretend name for things, but have no concept of the comparison or the implied meaning of the name (e.g., calling a stick a gun when pretending to be a soldier).

Meadows (1993) suggests two main reasons for conflicting research results and children's failure to comprehend metaphors. She argues that (1) children fail to realize that an implicit comparison and not a literal interpretation is intended and (2) children fail to see similarity between the vehicle and the topic. Children used in studies may be able to identify a metaphor within an explanation or paraphrase, but they may be unable to produce an adequate verbal account of the metaphor when asked for their understanding of it (Meadows 1993; Palermo 1989). As Baldwin and Luce (1982, p. 539) suggest, children "may fail to interpret a metaphor not because they do not 'know' a word but because they do not know it well enough." Hence, there is a great difference between knowledge of a word and understanding of a metaphor.

Most scholars (e.g., Ault 1983; Johnson and Pascual-Leone 1989) agree that cognitive development is in part responsible for children's comprehension of metaphors and that older children seem to comprehend metaphors better than younger children. Though young children may be capable of interpreting the metaphors, we posit that sixth graders should demonstrate a better ability to interpret metaphors than fourth and second graders.

H1: Children in the sixth grade interpret more metaphors correctly than children in the fourth and second grades.

Advertising Recall and Memory

Information processing theory, based on the representation of information in short-term memory, is a useful framework for assessing age differences in children's ability to recall advertisement content (MacInnis and Jaworski 1989; Roedder 1981, 1985). The storage capacity of short-term memory is limited, and therefore short-term memory is likely to diminish unless the information is transferred to long-term memory. Strategies such as rehearsal and elaboration enhance the likelihood of information being stored in long-term memory (du Plessis 1994; Roedder 1981, 1985). Hence, an information-processing approach focuses on children's ability to represent, store, and retrieve appropriate information. Roedder (1981) proposes three types of processors. Strategic processors are able to store and retrieve information, cued processors are "capable of using storage and retrieval strategies only when prompted to do so" (p. 145), and limited processors are incapable of employing such strategies even when prompted. The ages associated with the three levels of processing depend on the specific processing function of interest. Our particular concern is children's ability to store and retrieve advertised content; hence, we define limited processors as children younger than six years of age, cued processors as children six through nine years of age, and strategic processors as children 10 years of age and older (Roedder 1981).

Type of task should affect children's success in recall. For example, cue processors should perform well on probed recall tasks, but may have difficulty with free recall. Limited processors should find both probed and free recall tasks difficult, whereas strategic processors should perform well on both types of task. Accordingly, children at the highest grade level—strategic processors—should perform better than younger children in free recall tasks, but their performance advantage should diminish in cued recall tasks.

H2a: In a free recall task, sixth graders recall more advertisement copy (product, brand name) than fourth and second graders.

H2b: In a probed recall task, sixth and fourth graders recall more advertisement copy than second graders.

Errors in Recall and Memory

The recall protocols of older children should include more elaborations and fewer errors than the protocols of younger children. Studies have shown that young children are capable of drawing elaborations (Johnson and Smith 1981; Paris and Upton 1976), though older children tend to draw inferential elaborations more spontaneously than younger ones (Paris and Lindauer 1976). Welsch-Ross, Diecidue, and Miller (1997) claim that children remember and encode materials as they are understood conceptually. Younger children are less able to encode and have more rapid rates of forgetting than older children. Those researchers also discovered that younger chil-
and creative advertisements to more pallid and simple metaphors? Children often are assumed to prefer colorful advertisements because they relate a product unfamiliar to something less familiar—such as an advertised product. Because space is limited, advertisers look for the most effective yet economical presentation of products. Forceville (1996) argues that metaphors do occur in television advertising, but cannot be transposed satisfactorily to print. Print ads are ideal for metaphoric analysis as they can provide complete word and image text in a very limited space/time span. Ads containing metaphors sometimes need linguistic explanation to make sense of the picture (Forceville 1996), and print ads can provide the verbal and visual cues for metaphor comprehension.

Persuasiveness of metaphoric print advertising has also been examined. Nelson and Hitchon (1995) discovered that metaphors in print advertisement headlines were more persuasive than literal language across different samples of respondents, including children. The use of sensory metaphors (e.g., cranapple drinks being “music to your mouth”) seemed to in-
crease the persuasiveness of advertisements. Further, Nelson and Hitchon argue that metaphors are used most often in headlines and slogans. Metaphors in print headlines enhance persuasiveness because they can be understood at a glance and communicate the unique characteristic of the product.

Research identifies situations in which metaphors in advertising are understood most clearly by children (Forceville 1996; Kaplan 1990; Sperber and Wilson 1995). Sufficient contextual information is critical to indicate whether nonliteral material should be interpreted literally, provide cues about the meaning of the metaphors, and assist in making inferences about the meaning of metaphors (Siltanen 1990; Vosniadou 1987). In addition, a metaphorical relationship involves cross-modality such that the combination of the picture in the ad and the written text or sound track may lead to correct interpretation of metaphor (Kaplan 1990). Because pictures enhance children's learning of meaningful verbal information (Pressley, Pigott, and Bryant 1982), metaphors presented in multiple forms should reduce the difficulty of comprehending the metaphors and enhance recall, thus making it easier for even the youngest children to interpret the metaphors correctly.

Work on the effect of vividness on individuals' ability to understand and remember messages provides indirect support for the notion that metaphorical expression in advertisements enhances memory of the advertised content. Advertisements containing metaphors are more vivid than simple, literal versions of the advertisements (Mitchell, Badzinski, and Pawlowski 1994). Kelley, Gaidis, and Reingen (1989) suggest that a vivid message may attract consumers' attention and stimulate consumers' cognitive thought patterns better than a more pallid message. In a recent study, however, we found that metaphors did not enhance adults' memory of advertised content, and concluded that "while advertisers can expect that metaphors may make their products and services easier to understand, they cannot assume that metaphors make advertisements more memorable" (Mitchell, Badzinski, and Pawlowski, 1994, p. 201). Perhaps ads containing metaphors are not more memorable than simple, literal versions of the ads. Some studies, with both adults and children, show improved recall of materials with metaphors (Reynolds and Schwartz 1983; Pearson et al. 1981), whereas others show no improvement or even poorer performance in recall of materials with metaphors than in recall of literal equivalents (Harris 1979; Yarbrough and Gagne 1987).

On the question of whether children like ads with metaphors, research suggests that comprehension of an ad may increase the likability of the ad (Forceville 1996; Sperber and Wilson 1995). In addition, it indicates that children who believe ads also like the ads (Norris and Colman 1992; Rust 1986; Soldow 1983). Rust (1986) asserts that children cannot distinguish between familiarity, liking, and intention of advertising; liking and knowing are part of the same global response. Further, Resnik, Stern, and Alberty (1979) conclude that younger children like commercials and the products being advertised more than older children.

Resnik and his coworkers assert that attractive stimuli of structural elements encourage attention by children. They also argue that "not all stimuli penetrate one’s awareness, nor do all stimuli that command one’s attention leave lasting impressions. But when a stimulus does penetrate the child’s awareness, the child struggles to gain an understanding of it" (p. 7). One would assume that metaphorical pictures, because of their vividness and uniqueness (e.g., a picture of a cactus instead of a person holding a bar of soap) may gain more attention, thus increasing interest in and understanding of the advertisements.

The research reviewed above suggests that children may evaluate advertisements containing metaphors favorably, for instance, in terms of understandability, liking, and interest. Though it is not specifically clear whether metaphors enhance recall, we can assume at least that older children may interpret metaphors more clearly than younger ones and hence have greater ability to recall the metaphorical advertisements.

H3a: Children indicate a greater liking, interest, and understanding of ads with metaphors than of literal ads.

H3b: Children recall more advertised copy (brand name, product, copy), draw more elaborations, and make fewer recall errors from ads with metaphors than from literal ads.

Gender Differences

Little consistent research has demonstrated major differences between boys and girls’ abilities to understand information. In a metaphor study, Lutzer (1991) hypothesized that girls would outperform boys, but found that preschool boys (five to six years of age) outperformed girls on a metaphor comprehension task. She argued that boys' superior performance may be
due to their greater tendency to engage in the risk-taking activity that is needed to construct nonliteral interpretations or that boys have more metalinguistic awareness than girls. However, the children in Lutzer’s study were younger than the children in our study.

Historically, boys have outscored girls in visual-spatial (motor) skills and math-related skills and girls have outscored boys in verbal (language acquisition, spelling, writing, verbal expressiveness) abilities (Bate and Bowker 1997; Ivy and Backlund 1997; Stewart et al. 1996). Boys have been found to learn more individual and organizational skills necessary for coordinating activities, particularly in competitive play situations, and to be better at multidimensional tasks (e.g., making connections between visual metaphors and their meaning within advertisements) (Arlis and Borisoff 1993). Such findings have led to the traditional view that boys and girls may be equal when problems are solved by either verbal or spatial processes, but boys excel when only spatial problems are introduced and girls will excel at verbal problems (e.g., recalling information from advertisements). However, recent results indicate no clear differences between boys’ and girls’ abilities. Stewart et al. (1997) argue that boys and girls are equally proficient at all types of learning. Girls are not better at rote verbal skills and boys are not better at complex cognitive (mathematical) tasks, unless the task is purely visual-spatial, such as arranging blocks or putting together a puzzle. Ivy and Backlund (1997) argue that the gender gap in cognitive abilities is narrowing as a result of societal changes (parenting, teaching, and changing times). In addition, they conclude that results of studies on current gender differences in children are inconclusive, tentative, and contradictory to previous findings.

We therefore address the following research question:

RQ1: Are there gender differences in children’s (a) ability to interpret metaphors, (b) recall of advertisement copy, and (c) perceptions of advertisements?

Method

Respondents

A total of 62 children participated in the study: 20 second, 22 fourth, and 20 sixth graders. The mean ages of the children at the three levels were, respectively, 7.9, 9.8, and 11.9 years. The ratio of boys to girls at each grade was, respectively, 9:11, 12:10, and 13:7. All children attended one of two elementary schools and were from primarily lower middle-class neighborhoods in the Midwest. Ninety-five percent of the children were white. The schools were contacted personally by the investigator and granted permission to have consent forms sent home with the children in the three grades. Children who returned forms were contacted for the study. Parental permission and child assent were obtained prior to participation in the study.

Design and Procedures

The study had a 2x3x2 design. All factors were between subjects: print advertisement (metaphor vs. literal), grade (second, fourth, sixth), and sex (boys, girls). The children were interviewed by a female experimenter. The testing was conducted in a quiet room in the school building. Aside from the assignment of the same numbers of boys and girls to each condition, the children were assigned randomly to the conditions. We did not have equal numbers of boys and girls in each condition at each grade level because different numbers of boys and girls at each grade level had parental permission to participate in the study. The advertisements were presented in one of two random orders to control for primacy effect.

To introduce the tasks, the experimenter told the children, “I am interested in finding out what you think about some advertisements—that I will call picture stories. Will you help me? I am interested in several things such as how well you remember information presented in the pictures.” The children were also shown the tape recorder and were asked permission to tape their responses. All children then engaged in a short practice session.

Testing was done individually, with the child seated next to the experimenter at a small table. The child was shown print advertisements while a prerecorded voice on a cassette read each caption twice. To aid in case the child’s reading level was limited, the interviewer pointed to the words on the advertisement while the child listened to the tape. The child was encouraged to read along with the tape if he or she chose to do so. Immediately after the presentation of each advertisement, the child was asked his or her perceptions of the advertisement in terms of product liking, understandability, and the extent to which the advertisement captured his or her interest. After presentation of all the advertisements, the child engaged in free and probed recall tasks. To control for
primacy effects, the advertisements were presented in two different orders and each child was asked to recall the advertisements in the order in which they were presented. The children who saw the advertisements containing the metaphors engaged in an additional task that involved viewing each ad one at a time and being asked to provide explanations of each of the metaphors.

Interviewing took an average of 20 minutes per child and all interviews were completed during regular school hours within a four-week period. After each interview the child was thanked for participating, told not to discuss the advertisements with his or her classmates, and escorted back to the classroom.

Advertisements

Five print advertisements, featuring an orange drink, a toy sale, soap, crayons, and soup, were used in the study, with each advertisement having both metaphor and literal versions. The products and messages represented items with which the children were familiar, and hence were within their field of experience. For example, messages included words such as "cold winds," "cactus," and "rainbow" that would be typical to a child's experience. Regardless of the familiarity of the language, children (particularly those in the lower grades) have difficulty interpreting the incongruity between the common meaning of such words and the context in which the word is being used as a metaphor (Cometa and Eson 1978).

Print ads rather than broadcast ads were selected because research has indicated that using various modes of metaphor presentation is beneficial in research with children (Chaudhuri and Buck 1995; Forceville 1996; Kaplan 1990; Nelson and Hitchon 1995). Though television has had the most attention in advertising research, Soldrow (1983) has argued that relying on television creates incomplete understanding of children's processing of advertising. He and other researchers (du Plessis 1994; Krugman 1977; Stoneman and Brody 1983) argue that children are exposed to television, radio, and print advertising and that each modality involves different processing (as noted in our discussion of verbal and visual advertising). Hence, all forms of media need to be examined.

Larson (1998) indicates that, in general, advertising in the United States exceeds $400 per person per year and that each person sees approximately 16,000 ads, logos, and announcements every day, which includes multimedia (Woodward and Denton 1997). Woodward and Denton state that in 1992 children from four to 12 years of age spent more than $9 million on products and that children are the primary influencers of family spending on consumer goods. At least 18 million children six to 11 years of age read magazines and 22 million read newspapers each year (Simmons Market Research Bureau 1992). Given the amount of print media children read, print advertising is clearly pervasive in children's lives.

The metaphor version of the advertisements contained a metaphor in both pictorial and verbal form. The literal version of the advertisements contained a literal equivalent in both pictorial and verbal form. To ensure that the metaphors were easily identified, 20 undergraduate students viewed the advertisements and correctly interpreted the metaphors represented in them. The orange drink ad was used as a practice ad to help verify that the children understood the tasks, and the remaining four sets of ads were used for the analysis.

Constructed ads rather than real brand ads were used to ensure that respondents' reactions would not be preconditioned or biased by any previous exposure to the ads and hence result in prior recognition, recall, or brand attitudes (Macklin 1994; Nelson and Hitchon 1995; Motes, Hilton, and Fielden 1992). If some children had seen the ads previously and others had not, some children would be able to pull from their long-term memory and their recalled information would be biased. Finally, the particular ads were chosen so that the products would apply to both sexes. The print advertisements consisted of colored illustration and copy. Sample advertisements are shown in Figure 1.

Metaphor Explanations

One of the tasks assessed children's understanding of the metaphors. The children who saw and heard the advertisements containing the metaphors were asked what they thought the metaphors meant. For example, the children who were shown the soap advertisement were asked, "In this picture story it says, 'avoid the cactus feel.' What do you think that means?"

Free and Probed Recall

Two recall tasks were designed to investigate the effects of metaphor on the likelihood of remembering the information presented in the advertisements. In the free recall task the children simply recalled any information they could about the advertisements.
Figure 1
Examples of Ads Used in the Study

Literal Ads

For soft skin, use **SOFTINE**.
Especially made for children and adolescents.

**SOFTINE**
Soap for kids

Metaphor Ads

Avoid the cactus feel.
Use **SOFTINE**.
Especially made for children and adolescents.

**SOFTINE**
Soap for kids

16 GREAT SHADES

**COLOR BRITE CRAYONS**

CAPTURE THE RAINBOW

**COLOR BRITE CRAYONS**
A Rainbow of Colors
However, the instructions asked specifically whether the children could remember the products displayed in the advertisements. After all ads had been shown, the interviewer asked:

Now, I would like you to think real hard for me about the picture stories you just saw and heard. Can you tell me what you can remember about the picture stories?

Remember the practice story was about an orange drink called “Orange-Ade”?—what were the products in the other stories? Can you remember what the other ads were like?

In the probed recall task the experimenter then reminded the children of the product in each of the five advertisements to aid recall. For example, the children were asked, “Can you tell me everything you can remember about the picture about soap?” An additional probe, “What else do you remember about the advertisement?”, followed the children’s responses. The series of questions were asked for each ad the children saw.

**Perceptions of the Advertisements**

Questions were constructed to obtain children’s perceptions of the advertisements in terms of product liking, advertisement understandability, and the extent to which the advertisement captured their interest. Specifically, the question designed to assess children’s liking of the product was:

Sometimes we see things in picture stories that we would like to have and sometimes we see things we really don’t want. Can you tell me how much you would like the product displayed in the picture?

Responses were obtained on 5-point rating scales that were constructed on 50 by 15 cm pieces of cardboard. The scales consisted of five progressively larger circles with labels “not at all,” “a little,” “pretty much,” “very much,” and “very very much” below the appropriate circle. The investigator pointed to each circle while saying the phrases. The child was asked to point to the circle that best described his or her answer.

A similar scale was designed to obtain perceptions of advertisement understandability. The children were asked:

Sometimes picture stories or advertisements can be easy to understand but sometimes it can be hard to understand the meaning presented in picture stories. Do you think this picture was very hard, hard, just ok, easy, or very easy to understand?

The scale was constructed with two large circles representing the two extreme assessments, “very hard” and “very easy.” Medium-size circles represented “hard” or “easy” and the middle point was a smaller circle labeled “just ok.” Again, each response was read individually as the investigator pointed to the circles.

Finally, a question was asked to assess children’s level of interest in the advertisements:

Sometimes we might think picture stories are interesting and sometimes not so interesting—kind of boring. Do you think this story was very boring, boring, just ok, interesting, or very interesting?

The children indicated their interest in the advertisements on a 5-point rating scale. Again, the two extreme ratings, “very boring” and “very interesting,” had large circles, and small circles represented less extreme values. Children were shown the scale and asked to identify the circle that best represented their answer.

**Reliability**

To assess interrater reliability, two of the authors independently coded the responses. A grid representing each category, ad, and child was created so coders could check the appropriate column for each item. The free recall data were coded in terms of product recall, the correct mention of the product represented in the advertisement (e.g., crayons, soap), and brand name recall, the correct mention of the brand name presented in the ad (e.g., Color Brite, Softine). As each child was shown four advertisements, the brand recall scores ranged from zero (e.g., no products recalled) to four (e.g., products recalled for all four ads).

Probed recall was coded in terms of copy recall, the correct mention of copy beyond product or brand name (e.g., words or phrases directly from the ad) and copy elaboration, the correct mention of relevant inferences (i.e., appropriate extensions, explanations, or paraphrases beyond explicit copy). For the question probing for the children’s interpretation of the metaphors, the coders determined whether the responses were reasonable or unreasonable interpretations. The scores ranged from zero (no correct interpretations) to four (correct interpretations of all four metaphors). A reliability coefficient was calculated on 100% of the responses. The kappa obtained was .92, which indicates excellent agreement between the two coders in
classifying the responses (Landis and Koch 1977). All disagreements were resolved through discussion between the two coders.

Results

All analyses of variance were conducted by the fixed-effect unweighted means approach, and subsequent comparisons were performed by the Student-Newman-Keuls method. Unless otherwise noted, the analyses included type of advertisement (metaphor, literal), grade (second, fourth, sixth), and sex (boys, girls) as between-subject factors. In preliminary analyses, tests were run with advertisement selection as a repeated factor. With the exception of children's liking of the product, we found no significant effects for advertisement selection; in addition, advertisement selection did not interact with type of advertisement in any of the analyses. Thus, we decided to sum the children's scores across the four advertisements.

H1: Metaphor Interpretation

H1, that sixth graders interpret more metaphors correctly than children in the two lower grades, is supported. As only the children who saw the advertisements containing the metaphors were asked to interpret them, a three (grade) by two (sex) analysis of variance was run on the number of correct metaphor interpretations. Only a main effect for grade level emerged ($F_{2,50}=3.32, p<.05$). As expected, sixth graders ($\bar{X}=2.20$) were better at interpreting the metaphors than fourth graders ($\bar{X}=1.10$) and second graders ($\bar{X}=0.80$). Though the sixth graders performed better than the children in the two lower grades, they did have some difficulty in interpreting the metaphors (recall that the highest score possible on the task was four). Further, the findings demonstrate that even the youngest children were able to interpret some of the metaphors correctly.

H2: Recall of Advertisement Copy

H2a, that sixth graders recall more of an advertisement (product, brand name) than fourth and second graders in free recall tasks, is supported. Table 1 reports the data associated with children's recall of advertisement. For product recall, a significant main effect for grade was obtained ($F_{2,50}=5.34, p<.01$). As shown in Table 2, second graders ($\bar{X}=3.45$) indicated greater liking of the advertised products than did the children in the two higher grades (fourth, $\bar{X}=2.65$; sixth, $\bar{X}=2.79$). In terms of understandability, no significant effects emerged; however, higher levels of perceived understandability were achieved with the literal ($\bar{X}=4.29$) than with the metaphor ads ($\bar{X}=4.01$). We found no significant effects for the extent to which the advertisements captured the children's interest.

H3a: Perceptions of Advertisements

We found no support for H3a, that children indicate greater liking, understandability, and interest for metaphor ads than for literal ads. In terms of product liking, the analysis yielded only a main effect for grade ($F_{2,50}=5.34, p<.01$). As shown in Table 2, second graders ($\bar{X}=3.45$) indicated greater liking of the advertised products than did the children in the two higher grades (fourth, $\bar{X}=2.65$; sixth, $\bar{X}=2.79$). In terms of understandability, no significant effects emerged; however, higher levels of perceived understandability were achieved with the literal ($\bar{X}=4.29$) than with the metaphor ads ($\bar{X}=4.01$). We found no significant effects for the extent to which the advertisements captured the children's interest.

We found no support for the view that advertisements containing metaphors increase the probability of liking the advertised product, at least for young elementary-school children. Moreover, the metaphors did not make the advertisements easier to compre-
Table 1
Children's Recall of Advertisements

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<td><strong>Product Recall</strong></td>
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<td>3.14</td>
<td>3.00</td>
</tr>
<tr>
<td>Girls</td>
<td>1.17</td>
<td>2.60</td>
<td>3.40</td>
</tr>
<tr>
<td>Mean</td>
<td>2.62</td>
<td></td>
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</tr>
<tr>
<td><strong>Brand Recall</strong></td>
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<tr>
<td>Metaphor Ads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
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<td>1.75</td>
</tr>
<tr>
<td>Girls</td>
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<td>3.00</td>
<td>1.50</td>
</tr>
<tr>
<td>Mean</td>
<td>1.37</td>
<td></td>
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</tr>
<tr>
<td>Literal Ads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>1.25</td>
<td>1.43</td>
<td>1.60</td>
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<tr>
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<td></td>
</tr>
<tr>
<td><strong>Probed recall</strong></td>
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</tr>
<tr>
<td><strong>Copy</strong></td>
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<tr>
<td>Metaphor Ads</td>
<td></td>
<td></td>
<td></td>
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<td>15.00</td>
<td>17.50</td>
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<tr>
<td>Mean</td>
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<tr>
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<td></td>
<td></td>
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<td>19.29</td>
<td>19.80</td>
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<tr>
<td></td>
<td>10.65</td>
<td>18.36</td>
<td>19.30</td>
</tr>
</tbody>
</table>

end; in fact, the literal advertisements seemed to have a slight advantage in terms of perceived understandability for the children.

**H3b: Metaphors Aid Recall**

Will children recall more advertisement copy, draw more elaborations, and make fewer errors in recall with metaphor ads than with literal ads? The results of our study suggest that they will not. The analyses did produce a main effect for type of advertisement on children's ability to recall the product ($F_{1,50}=19.65$, $p<.001$), but children recalled more products from literal ads ($\bar{X}=2.62$) than from metaphor ads ($\bar{X}=1.57$). Similarly, as Table 1 shows, the analyses did yield a main effect for type of advertisement on children's recall of advertised copy ($F_{1,50}=9.99$, $p<.001$), but again more information was recalled from literal ads ($\bar{X}=18.91$) than from metaphor ads ($\bar{X}=13.27$). Our findings of poorer recall performance for metaphors than for their literal equivalents is consistent with previous results (Mitchell, Badzinski, and Pawlowski 1994; Yarbrough and Gagne 1987).

**Research Question: Sex Differences**

Are there sex differences in children's ability to interpret metaphors? Our findings indicate that boys and girls do not differ in ability to interpret metaphors correctly.

Are there sex differences in ability to recall advertisements? For brand name recall, our results show a main effect for sex ($F_{1,50}=3.93$, $p<.05$), indicating that girls ($\bar{X}=1.75$) recalled more brand names than boys ($\bar{X}=1.32$). The two main effects, however, must be interpreted in light of a significant grade by sex interaction ($F_{2,50}=3.73$, $p<.05$): we found no differences in the second grade boys' ($\bar{X}=0.89$) and girls' performance ($\bar{X}=0.45$), but the fourth ($\bar{X}=2.70$) and sixth grade girls ($\bar{X}=2.43$) outperformed the fourth ($\bar{X}=1.25$) and sixth grade boys ($\bar{X}=1.69$).

Our findings also show that boys and girls differed in their likelihood of drawing elaborations. The analysis of children's tendency to draw accurate elaborations from advertisements yielded only a main effect for sex ($F_{1,50}=4.72$, $p<.05$). Boys ($\bar{X}=2.15$) drew more elaborations than girls ($\bar{X}=1.36$).

For number of errors in recall protocols, a sex by grade interaction emerged. Specifically, the boys in the two lower grades made more errors in recall than girls, yet the sixth grade girls made more errors than...
The Journal of Advertising

Table 1
Children's Recall of Advertisements (continued)

<table>
<thead>
<tr>
<th></th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Second</td>
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<td><strong>Elaborations</strong></td>
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<tr>
<td>Girls</td>
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<tr>
<td>Mean</td>
<td>1.77</td>
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<tr>
<td>Girls</td>
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<tr>
<td>Mean</td>
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<tr>
<td><strong>Errors</strong></td>
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</tr>
<tr>
<td>Girls</td>
<td>.60</td>
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<tr>
<td>Mean</td>
<td>1.37</td>
</tr>
<tr>
<td>Literal Ads</td>
<td></td>
</tr>
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<td>Boys</td>
<td>1.50</td>
</tr>
<tr>
<td>Girls</td>
<td>1.17</td>
</tr>
<tr>
<td>Mean</td>
<td>1.45</td>
</tr>
</tbody>
</table>

Note: Different subscripts in rows or columns denote means that are significantly different at p ≤ .05.
Means with the same subscript in the same row are not significantly different.

serve to enhance the memorability of an ad, the consumer must make an association between the metaphor and the advertised product. In other words, the metaphor must become a representational act connected to the advertised product.

Another speculation is that an association is formed through repetition; that is, through repeated exposure a metaphor becomes associated with a particular product. The implication for advertisers is that they must be selective in choosing a metaphor and then continue to use the metaphor throughout an advertising campaign. The advertising of Skittles is a good example of how multiple exposures to metaphors might increase the likelihood that the consumer will make a link between the metaphor and the product; the rainbow is featured in both the advertisement and the packaging of the product.

Some cognitive activity also might strengthen the association between the metaphor and the advertised product. Work on cognitive responses to advertising seems promising (Brucks, Armstrong, and Goldberg 1988; Brucks, Goldberg, and Armstrong 1985). It suggests that children's thought processes should be tapped as they view advertisements. Questions such as “What are your thoughts as you view this advertisement?” and “Why do you think there is a picture of a rainbow in the advertisement?” may prompt cognitive activity triggering the desired association. In practical terms, advertising could contain copy prompting the connection. A good example is found in the Skittles advertisement. The copy states, “Merlin’s magic won't make another rainbow—not without the right combination of SKITTLES.” We speculate that once an association is made between the rainbow and Skittles, the rainbow should prompt memory of the product and related copy. In other words, there must be a logical or meaningful tie between the product and the metaphor. Hence, the stronger the association, the greater the likelihood that the metaphor will prompt recall of advertised content.

In support of that conjecture, some evidence indicates that product symbols aid young children's memory of advertisements, especially with multiple exposures to the advertisements (Macklin 1994). Perhaps a child needs several exposures to an advertisement before the metaphor becomes associated with a particular product. In short, a metaphor may enhance memory for advertised copy provided that the metaphor functions as a symbol for the product, and multiple exposures to the advertisement might be necessary before the metaphor can serve as a representation of a specific product.
Table 2  
Children's Perceptions of the Advertisements

<table>
<thead>
<tr>
<th></th>
<th>Second</th>
<th>Fourth</th>
<th>Sixth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liking</strong></td>
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<tr>
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<tr>
<td>Boys</td>
<td>3.76</td>
<td>2.36</td>
<td>2.70</td>
</tr>
<tr>
<td>Girls</td>
<td>3.48</td>
<td>2.40</td>
<td>2.10</td>
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<tr>
<td>Literal Ads</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>3.30</td>
<td>2.86</td>
<td>3.20</td>
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<tr>
<td>Girls</td>
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<td>2.92</td>
<td>2.60</td>
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<tr>
<td>Mean</td>
<td>3.45</td>
<td>2.65</td>
<td>2.79</td>
</tr>
<tr>
<td><strong>Understandability</strong></td>
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<td>Metaphor Ads</td>
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<td></td>
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<tr>
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<tr>
<td>Girls</td>
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<td>4.70</td>
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<tr>
<td>Literal Ads</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Boys</td>
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<td>4.57</td>
<td>4.44</td>
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<tr>
<td>Girls</td>
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<td>4.16</td>
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<tr>
<td>Mean</td>
<td>4.03</td>
<td>4.25</td>
<td>4.17</td>
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<td><strong>Interesting</strong></td>
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<tr>
<td>Metaphor Ads</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>3.36</td>
<td>2.72</td>
<td>3.52</td>
</tr>
<tr>
<td>Girls</td>
<td>3.68</td>
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<td>Literal Ads</td>
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<tr>
<td>Boys</td>
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<td>3.09</td>
<td>3.32</td>
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<tr>
<td>Girls</td>
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<td>3.08</td>
<td>3.08</td>
</tr>
<tr>
<td>Mean</td>
<td>3.51</td>
<td>3.00</td>
<td>3.23</td>
</tr>
</tbody>
</table>

Note: Scores could range from 1 (e.g., "very hard to understand") to 5 (e.g., "very easy to understand"). Different subscripts denote means that are significantly different at p < 0.05. Means with the same subscript in the same row are not significantly different.

Our results show that fourth and sixth graders recall brand name, product, and additional copy better than second graders. We expected, however, that the fourth graders would perform much like the second graders on the presumably more difficult free recall task but much like the sixth graders on the easier probed recall task. Why did type of recall not affect recall performance as hypothesized? One possibility is that recall is a function of the difficulty of the type of information to be recalled rather than the type of task (free or probed recall). In our study, probed recall involved giving the children the product (e.g., crayons) and asking them to tell us everything they could remember about the advertisement. The probed recall protocols were assessed in terms of the amount of additional copy recalled. In contrast, the free recall protocols were coded in terms of product and brand name (e.g., Color Brite, Softline). It seems reasonable to expect that recall of brand names is more difficult than recall either of product name or additional copy. Thus, Roedder's (1981) claim that children's recall ability depends on the task may not have been tested adequately because the free and probed recall tasks were not equivalent in terms of task demands.

Our findings fail to support the hypothesis that children indicate greater liking, interest, and understanding for metaphor ads than for literal ads. Perhaps children's evaluations of advertisements, especially in terms of interest and liking, are more a function of the featured product than of the advertisement. The products (e.g., crayons) may have had little appeal for the elementary-school children. The fact that the second graders indicated greater liking of the advertised products than the older children suggests that the products rather than the advertisements may have been the focus of the evaluations. As reported by Rust (1986) and Norris and Colman (1992), younger children do not distinguish as much between what is familiar to them and what they like; what they attend to, they like. The implications for advertisers is that even though they may produce a creative advertisement, older children may not necessarily like it, which may have some ramifications for their purchasing habits. In future work, distinguishing evaluations of the advertisements from evaluations of the products will be important.

Another possibility is that older children do not always exercise their cognitive abilities. Rust (1986) indicates that there is no assurance that older children will use more advanced thinking than younger children. We only know that they can. If older children are not enthusiastic about the topic or do not have a vested interest in the outcome, they may choose not to use their higher-order thinking skills, thus having less motivation for involvement with the ad. In addition, Ault (1983) posits that information too familiar will become habit and lose meaningfulness. Perhaps some of the ads were too simplistic for older children, who instead of trying to understand the metaphors, just retrieved their own common knowl-
edge of items and did not engage in formal thinking. Traditional research has indicated the importance of using metaphors to gain consumer interest, yet in our study older children did better with literal ads than with metaphorical ones. Managerial implications are that perhaps creative ads with vivid literal images may be as effective as creative metaphoric advertisements. Metaphors may not necessarily make ads easier to comprehend or remember.

In addition, the difficulty level of the primary message may affect the interpretation of an advertisement. Possibly, messages delivered to children in the context of advertising are simple and can be communicated effectively through either literal or metaphorical language. Our results for perceptions of the advertisements show that the children have equally understanding of and interest in the ads regardless of whether the ads were the metaphor or literal type. Apparently neither type has an advantage over the other.

The findings also reveal that boys and girls differed in recall of brand names and tendency to draw elaborations. Specifically, the fourth and sixth grade girls recalled more brand names than the fourth and sixth grade boys; however, the boys drew more elaborations than the girls. Perhaps girls pay greater attention to details—the specifics of the advertisements. In contrast, boys may be more likely to engage in making plausible extensions of advertised content than girls. The finding that the fourth and sixth grade boys made more errors than the girls in those grades indicates that girls perhaps engaged in more rote learning and were more likely to pay attention to the specifics of ads than boys, though the fact that the sixth grade girls made more errors than the sixth grade boys is at odds with that speculation. Further work exploring how boys and girls differ in processing advertisements would be worthwhile.

Are metaphors in advertisements an effective way to market a product? Our study suggests that advertisers should be aware that young readers may have difficulty interpreting metaphors. Further, metaphors in advertisements have little advantage over their literal equivalents in terms of recall and perceptions—at least within the constraints of our study. We propose that metaphors may aid recall provided that they clearly represent the advertised products and are within the cognitive environment of the consumer. In addition, the associations between the metaphors and the products may be strengthened through repeated exposure and/or some kind of cognitive or behavioral activity. Finally, our results suggest some interesting gender differences in terms of information processing that warrant further exploration.

**References**


