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ABSTRACT

This study adds to the small but growing body of literature that examines the effectiveness of media literacy training on children's responses to persuasive messages. Within the framework of the Elaboration Likelihood Model (ELM) of persuasion, this research investigates whether media literacy training is a moderating variable in the persuasion process and whether such training affects children's attitudes toward a product of high personal relevance. A posttest-only experimental design with random assignment was used to test five independent variables: active cognitive processing; attitude toward product; attitude toward advertisement; attitude toward television advertising in general; and attention to peripheral cues. It was hypothesized that subjects exposed to media literacy training would follow the central route to persuasion, as opposed to the peripheral route, and have more positive attitudes toward an advertised product when exposed to many and few strong quality arguments. Test results suggested that media literacy training was not a moderating variable in the ELM. Additionally, no evidence was found to support the prediction that media literacy, argument quality, and number of arguments influence children's attitudes. However, results indicated that media literacy training did produce differences in attitudes among subjects. The findings suggest that media literacy training makes subjects more skeptical of commercial messages because they are more aware of the techniques used by advertisers to try and persuade viewers. If children can become more aware of the persuasive techniques used by advertisers, then they will be better equipped to analyze commercials more critically and hopefully make better decisions about products. Contains 56 references and 8 notes. (Author/RS)

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Abstract

This study adds to the small but growing body of literature that examines the effectiveness of media literacy training on children's responses to persuasive messages. Within the framework of the Elaboration Likelihood Model of persuasion, this research investigates whether media literacy training is a moderating variable in the persuasion process and whether such training affects children's attitudes toward a product of high personal relevance. A posttest-only experimental design with random assignment was used to test five independent variables: Active cognitive processing; attitude toward product; attitude toward advertisement; attitude toward TV advertising in general; and attention to peripheral cues. It was hypothesized that subjects exposed to media literacy training would follow the central route to persuasion, as opposed to the peripheral route, and have more positive attitudes toward an advertised product when exposed to many and few strong quality arguments.

Test results suggested that media literacy training was not a moderating variable in the ELM. Additionally, no evidence was found to support the prediction that media literacy, argument quality, and number of arguments influence children's attitudes. However, results indicated that media literacy training did produce differences in attitudes among subjects.

The findings suggest that media literacy training makes subjects more skeptical of commercial messages because they are more aware of the techniques used by advertisers to try and persuade viewers. If children can become more aware of the persuasive techniques used by advertisers, then they will be better equipped to analyze commercials more critically and hopefully make better decisions about products.

Media literacy and attitude change: Assessing the effectiveness of media literacy training on children's responses to persuasive messages within the ELM

Children are exposed to persuasive messages in the media every day. The average American child sees in excess of 30,000 television commercials for various products each year (Condry, Bence, & Scheibe, 1988). By the time a student graduates high school "he or she will have spent twice as much time in front of the television set as in the classroom" (Pungente, 1996, p. 9). The influence and pervasiveness of television is evident in children's basic values, clothing choices, and interpersonal interactions (Pungente, 1996).

Since most commercials and other media messages are constructions of reality that have a specific purpose--usually to sell a product or advocate an idea--children need to understand how to evaluate and analyze critically the values and ideologies that accompany these products and ideas (Melamed, 1989). In short, children need to be **media literate**. Through media education students learn how to identify such ideological messages and analyze the underlying values that are communicated.

Although several researchers have argued that media literacy training will improve students' evaluation of media messages (Considine, 1990; Duncan, 1989; Kahn & Master, 1992; Melamed, 1989; Wulfemeyer, Sneed, Ommeren, & Riffe, 1990), few studies have tested the effectiveness of such training empirically. Therefore, the purpose of this investigation is to assess the effectiveness of media literacy training on children's evaluation of persuasive media messages.

Empirical Studies Focusing on Media Literacy

Scholarly research suggests that media portrayals--particularly in advertising--are linked to children's attitudes and behaviors toward health issues such as alcohol consumption (Aiken, Leathar, & O'Hagan, 1985; Austin & Johnson, 1997a, 1997b; Austin & Nach-Ferguson, 1995). Recent work by Austin and her colleagues (Austin, 1995; Austin & Freeman, 1996; Austin & Johnson, 1997a; Austin & Johnson, 1997b; Austin & Meili, 1994; Austin & Nach-Ferguson, 1995; Austin, Roberts, & Nass, 1990) suggests that more effective health-related interventions should target children's decision-making strategies rather than inform or persuade based on campaign priorities. Austin and colleagues developed the Message Interpretation Process (MIP) model based on work in decision-making theory, social-cognitive development and media effects research. The MIP model views children as active decision-

makers who make decisions based on their skills, needs, goals, and environment. The model posits a theory of media decision-making and identifies logical and emotional decision-making processes of children. Message designers can use the model to identify the most effective point of intervention. Austin and Johnson (1997a, 1997b) found that children's understanding of persuasive content is a key variable in the decision-making process and identified media literacy training as an effective means of improving children's understanding of persuasive media content within a decision-making framework. The present study, which builds on Austin and Johnson's research, attempts to understand how media literacy helps to improve children's understanding of persuasive media content by examining media literacy within the framework of an established model of persuasion.

ELM as a Framework

In order to measure effectively the impact of media literacy training on children's responses to persuasive messages the Elaboration Likelihood Model of persuasion (ELM) (Petty & Cacioppo, 1986a, 1986b) will be used to provide a framework for this investigation. The rationale for choosing the ELM as a framework lies in the desire to determine if media literacy skills of a message recipient are a moderator of persuasion. Petty and his colleagues (Cacioppo & Petty, 1979; Petty, Cacioppo, & Goldman, 1981; Petty, Harkins, & Williams, 1980; Petty, Wells, & Brock, 1976) noted several variables could play a moderating role in the persuasion process. These include personal involvement, forewarning of persuasive intent, argument quality, number of arguments, source attractiveness, source expertise, mood, message repetition, and distraction. This researcher believes that media literacy skills can have a moderating effect on the persuasion process. Therefore, this study aims to test the moderating effect of media literacy training on children's attitude toward the persuasive message(s) contained in product advertisements.

The ELM has developed into a general framework for the study of persuasion in the field of social psychology, but it also has been applied effectively to advertising communications (Petty & Cacioppo, 1983; Petty, Cacioppo, & Schumann, 1983) and become popular in the field of consumer behavior (Scholten, 1996). Petty and his colleagues have tested the ELM in terms of issues (e.g., comprehensive exams) (Petty & Cacioppo, 1979; Petty, Cacioppo et al., 1981) as well as advertised products (Petty et al., 1983). Others have used the ELM to explain advertising effectiveness and tested the influence of attitude toward the ad within the framework of the ELM.

Scholten (1996) argued that the ELM is useful for advertising research because of its heuristic advantages rather than its integrative merits.

> The ELM overcomes a critical limitation of traditional hierarchy-of-effects models by relaxing the assumption that cognitively complex changes in consumer attitudes are necessary for effective advertising. By identifying two distinct routes to attitude change, the model generates valuable suggestions concerning advertising effectiveness. (Scholten, 1996, p. 100)

Other researchers have found the ELM useful for analyzing comparative advertising ((Droge, 1989), "while accounting for the potential influence of attitude toward the ad" (MacKenzie & Lutz, 1983, cited in James & Hensel, 1991, p. 60). Lutz, MacKenzie, and Belch (1983) found that attitude toward the ad may serve as a positive or negative peripheral cue within the ELM framework. Petty and Cacioppo (1983) reported that attitude toward the ad had stronger effects on attitude change than brand cognitions under low involvement and low knowledge conditions. Additionally, attitude toward the ad was found to have a greater impact on attitude than brand cognitions under high elaboration likelihood conditions (Petty & Cacioppo, 1983). In other words, the findings revealed that subjects' attitudes toward an advertised product were influenced more by their attitude toward the ad than their thoughts about the actual product.

Lord, Lee, and Sauer (1995), tested two competing hypotheses relative to the formation of attitude toward the ad and found that "results supported the combined-influence hypothesis across varying levels of processing motivation and opportunity with differences in the relative magnitude of argument and cue effects consistent with the Elaboration Likelihood Model" (p. 73). The ELM is an excellent framework to adequately explain the effectiveness of advertising; however, "the influence of attitude toward the ad as a negative cue within this framework is not fully understood in the context of negative advertising" (James & Hensel, 1991, p. 62). More specifically, the ELM explains the effectiveness of advertising well, but it is unclear what effect attitude toward the ad has when it is considered a negative influence within a negative advertisement.

Over time, the ELM has developed into one of the most comprehensive models of persuasion in the media effects research. However, much of the ELM research has focused on college-age students, and no studies have examined the moderating role of media literacy skills. This study attempts to apply the ELM to a younger population and determine the role of media literacy within the persuasion process.

The average American child will spend twice as much time in front of the television as in the classroom by the time he/she graduates high school (Pungente, 1996). It is evident that children need to

be equipped with skills that help them evaluate the enormous number of persuasive media messages. In order to be sure that media literacy is an effective means of inoculating children against persuasive messages, a closer look at the impact of media literacy skills on the persuasion process is necessary.

LITERATURE REVIEW

The following review of literature will briefly highlight the evolution of the media literacy movement and provide a formal definition of media literacy. The discussion also will address the key components of the Elaboration Likelihood Model of persuasion through a review of relevant experiments and commentaries. Finally, research questions and hypotheses based on the relevant literature will be advanced.

Media Literacy

What individuals know about the world beyond their immediate surroundings comes via the media (Ontario Ministry of Education, 1989). Unfortunately, the media do not present their messages in a neutral and value-free way; they shape and distort reality (Considine, 1990; Melamed, 1989). These value-laden messages and constructions of reality pose a problem for society because individuals, especially children, are unable to distinguish between truthful and misleading messages sent by the media. It is through media literacy that they can be taught to be informed and responsible consumers of the media.

Several researchers made calls for the inclusion of media education within existing U.S. school curricula in the late 1980s and early 1990s (Considine, 1990; Duncan, 1989; Kahn & Master, 1992; Melamed, 1989; Wulfemeyer, Sneed, Ommeren, & Riffe, 1990). They argued that media education makes students critically aware of what they see, hear, and read, and it should be taught regularly in elementary and secondary schools. Several states, including Georgia, New Mexico, North Carolina, Minnesota, and Massachusetts, heeded this call by instituting some component of media literacy within their school curricula (Considine, 1995; Darlington, 1996).

Support and advocacy groups such as the Center for Media Education, the Center for Media Literacy, the National Telemedia Council, Citizens for Media Literacy, the National Media Citizenship Project, and the Children's Media Policy Network were created to push for a media literate society.

National conferences, like the annual Media Education Conference and the Media Literacy Citizenship Project conference, have brought together educators, media professionals and concerned citizens in an effort to create a unified voice for media literacy. At the Aspen Institute's[1] National Leadership Conference on Media Literacy in 1992, participants developed a formal definition of media literacy:

> a **media literate person**--and everyone should have the opportunity to become one--can decode, evaluate, analyze and produce both print and electronic media. The fundamental objective of media literacy is critical autonomy in relationship to all media. Emphases in media literacy training range widely, including informed citizenship, aesthetic appreciation and expression, social advocacy, self-esteem, and consumer competence. (Aufderheide, 1993, p.1)

This comprehensive definition illustrates the wide range of skills needed to be media literate. Media literacy teaches students how to deconstruct, analyze, and critique media messages. However, media literacy goes beyond the creation and production of media messages that are the focus of school media (e.g., school newspaper, television productions, and yearbook). Media education provides the opportunity for students to learn to work together toward a common goal. In the process they learn about responsibility, cooperation, and problem solving. No matter what they do in life, they will always encounter situations that require these skills. In addition, students identify their strengths and weaknesses, develop varied interests, and accept new challenges.

The National Communication Association (1998) developed standards for speaking, listening, and media literacy in K-12 education. Furthermore, media literacy is also reaching the community through workshops conducted by the National PTA and "Cable in the Classroom" (Considine, 1995). It is evident media literacy is building a strong network of committed educators, media professionals, and citizens to create a more media literate population.

Elaboration Likelihood Model

The Elaboration Likelihood Model of persuasion has been tested in a number of empirical studies. The ELM posits that there are two routes to persuasion, a central route and a peripheral route. The central route of persuasion is characterized by active cognitive processing and leads to attitude changes that are more enduring and predictive of future behavior (Cialdini, Petty, & Cacioppo, 1981; Petty & Cacioppo, 1980). The peripheral route is characterized by the attention given to positive and negative

[1] "The Aspen Institute is an international nonprofit educational institution dedicated to enhancing the quality of leadership through informed dialogue. . . . [Its] Communications and Society Program promotes integrated, values-based decision making in the fields of communications and information policy. It accomplishes this by bringing together representatives of industry, government, the media, the academic world, nonprofits, and others to assess the impact of modern communications and information systems on

cues (e.g., source attractiveness, number of arguments) within the persuasion context. Attitude changes tend to be temporary and unpredictive of behavior (Petty et al., 1983). The following review of the literature will examine the empirical research that has tested and validated the ELM.

Central Route of Persuasion

The central route to persuasion involves active cognitive processing of persuasive communications. This route of persuasion "views attitude change as resulting from a person's diligent consideration of information that s/he feels is central to the true merits of a particular attitudinal position" (Petty et al., 1983, p. 135). In other words, a person uses his/her prior knowledge and experience to scrutinize all of the relevant information in a message in order to evaluate the merits of the advocated position (Petty & Cacioppo, 1986a; Petty & Priester, 1994). An individual's motivation and ability to process information and generate favorable and/or unfavorable thoughts characterize the central route. Other characteristics include 1) cognitive justification of behavior different from existing attitudes (Cummings & Venkatesan, 1976; Festinger, 1957) and 2) understanding, learning, and retaining issue/product relevant information (Bettman, 1979; Hovland, Janis, & Kelley, 1953; McGuire, 1976).

Additionally, the central route is characterized by individual cognitive responses to external messages (Cacioppo & Petty, 1980; Greenwald, 1968; Petty, Ostrom, & Brock, 1981; Wright, 1980) and the way a person integrates issue/product-relevant beliefs into a summary evaluation (Azjen & Fishbein, 1980; Lutz & Bettman, 1977; Troutman & Shanteau, 1976). Careful processing leads to an attitude that becomes part of a person's belief structure. However, research has shown that considerable cognitive work does not imply the formation of rational or accurate attitudes (Petty & Priester, 1994). The key point is that careful and thoughtful evaluation of a persuasive message can change attitudes. Attitudes changed by the central route "have been found to be relatively accessible, persistent over time, predictive of behavior, and resistant to change until they are challenged by cogent contrary information" (Cialdini et al., 1981; Petty et al., 1980; Petty & Priester, 1994, p. 100-101).

Peripheral Route to Persuasion

The peripheral route of persuasion espouses that attitude change can occur without effortful evaluation of a message. A person's motivation and ability to process information are low along this route. This route relies on simple cues within the persuasion context to influence attitude change. These

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democratic societies. The Program also promotes research and distributes conference reports to leaders in the communications and information fields and to the broader public" (Aspen Institute, 1996, available http://www.aspeninst.org/Index.html).

cues include, among others, source attractiveness, perceived expertise, and the number of arguments. Attitude change via the peripheral route of persuasion can be highly effective; however, research has shown that such attitude changes are "less accessible, less enduring, and less resistant to subsequent attacking messages" (Petty & Priester, 1994, p. 101) than carefully processed information (Petty & Cacioppo, 1986a).

Unlike the central route, attitude change along the peripheral route is not the result of an individual's consideration of the pros and cons of an issue; rather, it is the result of a person associating the attitude issue or product with positive or negative cues. Also, attitude change may result because a person makes an inference about the merits of the argued position based on simple cues within the persuasion context (Petty et al., 1983). For example, a person may accept an advocated position because he/she received good news before exposure to the persuasive communication.

The Moderating Role of Involvement

Petty et al. (1983) conducted an experiment to test the moderating role of involvement in the ELM. Over 150 male and female undergraduates at the University of Missouri-Columbia were randomly assigned to each of the cells in a 2 (high vs. low involvement) x 2 (strong vs. weak argument) x 2 (celebrity vs. non-celebrity status) factorial design. Subjects were told they were part of a study concerning the evaluation of magazine and newspaper ads conducted by the psychology department and journalism school (Petty et al., 1983).

Subjects were presented with two booklets. The first contained instructions and advertisements. The second was a questionnaire booklet. Each booklet varied on level of involvement, argument quality and peripheral cue (Petty et al., 1983).

Involvement was manipulated by offering a free gift to the subjects for their participation. To establish high involvement, subjects were offered a disposable razor, which happened to be the brand advertised in one of the ads in the booklet. Additionally, subjects were told that the razor and advertisement would be test marketed in Midwestern cities, including their own. Low involvement was established by offering a brand of toothpaste not advertised in the booklet. To further establish low involvement, subjects were told the razor and advertisement would be test-marketed on the East Coast. Thus, high involvement subjects were led to believe they would make a decision about a product in the experiment and that the product soon would be available in their area. Low involvement subjects were

led to believe they would not have to make a decision about razors in the experiment and that it would not be available in their area in the foreseeable future (Petty et al., 1983).

Argument quality was either strong or weak. The strong arguments ad suggested the razor was "scientifically designed" and listed five statements about the razor (e.g., "Handle is tapered and ribbed to prevent slipping"). The weak arguments ad characterized the razor as "designed for beauty" and listed five statements about the product (e.g., "Floats in water with a minimum of rust") (Petty et al., 1983).

Celebrity and non-celebrity endorsements were used to vary the peripheral cue. Celebrity endorsed ads featured famous golf and tennis athletes. Non-celebrity ads featured average looking people unfamiliar to the subjects (Petty et al., 1983).

The questionnaire booklet contained the dependent measures. On the first page, subjects were asked to list all the product categories that were advertised and asked to recall the brand name of the products in each category. The second page asked subjects to select the correct brand name from seven choices and match it with one of the 12 product category descriptors. These brand recall and recognition measures were used for "their practical importance and for purposes of comparison with the attitude data" (Petty et al., 1983, p. 139).

After responding to questions about one of the legitimate ads in the booklet, subjects answered questions about the crucial Edge razor ad. These questions were placed early in the booklet to avoid subject fatigue and boredom and achieve maximum manipulation effectiveness. Subjects responded to questions about purchase intentions and their overall impression of the product. These measures were averaged into a general positive or negative attitude toward the product (Petty et al., 1983).

Next, subjects answered questions consistent with the cover story and then were instructed to list all their thoughts while they examined the Edge ad. This thought listing activity was designed to be a "cognitive response" measure; however, subjects did not list many thoughts about the product. Results indicated this measure was unaffected by the manipulations. The authors suggest that the measure may have been more sensitive if it had been administered immediately after exposure to the Edge ad (Petty et al., 1983).

Findings indicate that manipulation of argument quality influences attitudes to a greater degree when involvement is high. Manipulating the product endorser resulted in a greater impact on attitudes under low involvement conditions rather than high. These results are consistent with the ELM and confirm there are two distinct routes to persuasion (Petty et al., 1983).

Research Questions

This study explores the effects of media literacy training on children's attitudes toward specified products within the framework of the Elaboration Likelihood Model (ELM) of persuasion (Petty & Cacioppo, 1986a, 1986b) in order to understand better the effectiveness of media literacy training on children's attitudes toward persuasive messages. The catalyst of this empirical investigation is the question: "What are the effects of media literacy training on children's attitudes toward persuasive messages?" While this question serves as a focus for the study, the following research questions guide this empirical investigation.

1) Does media literacy training increase the likelihood of persuasion via the central route?
2) What role does media literacy training play in influencing children's attitude toward a product of high personal relevance?

The Hypotheses

The proposed hypotheses are based on the research questions above and the relevant literature. The first two hypotheses deal with the ELM as a whole. They suggest that media literacy training plays a moderating role in the persuasion process. The hypotheses are grounded in previous research by Petty and his colleagues.

> In general, we suspect that any variable that increases the likelihood that people will be motivated and able to engage in the difficult task of evaluating the message arguments increases the likelihood of the central route to persuasion. On the other hand, any variable that reduces a person's motivation and/or ability to think about the message content would make the peripheral route more likely. (Petty, Cacioppo et al., 1981, p. 854)

To test the effectiveness of media literacy training to increase the likelihood of children following the central route to persuasion for an advertised product the following hypotheses are advanced.

H1: Media literacy training will increase the likelihood of children following the central route to persuasion for an advertised product.

H2: No media literacy training will increase the likelihood of children following the peripheral route to persuasion for an advertised product.

Four additional hypotheses are advanced to test the effectiveness of media literacy training on changing children's attitude toward a particular advertised product that is of great personal relevance.

H3: Media literacy training, as compared to no training, will yield greater positive changes in children's attitude toward an advertised product when many strong arguments are used.

H4: Media literacy training, as compared to no training, will yield greater positive changes in children's attitude toward an advertised product when few strong arguments are used.

H5: Media literacy training, as compared to no training, will yield greater negative changes in children's attitude toward an advertised product when many weak arguments are used.

H6: Media literacy training, as compared to no training, will yield greater negative changes in children's attitude toward an advertised product when few weak arguments are used.

METHODOLOGY

Overview

A 2 (argument quality) x 2 (number of arguments) x 2 (media literacy training) posttest-only between-subjects experimental design with random assignment was used to test the moderating role of media literacy training on children's attitude toward an advertised product within the framework of the ELM. The central focus of the experiment was to assess if media literacy training influences the process by which children's attitudes toward products are changed.

Subjects

Subjects were recruited for the experiment from fourth and fifth grade classes at Statham Elementary School in Statham, Georgia. Parental consent forms were sent home with every child in the fourth and fifth grades. As an incentive, all students who returned their consent form were eligible for a gift certificate drawing. A drawing for each grade awarded local mall gift certificates of $25, $15, and $10. The total number of subjects that participated in the experiment was 148.

Procedure

Students numbered off by twos in their homeroom class. All "ones" remained in their homerooms and viewed a videotaped broadcast of "Bill Nye the Science Guy" and discussed the content of the program on caves. All "twos" gathered in a separate room and were taught a media literacy training lesson[2] by the experimenter. After the discussion and lesson were completed, students were randomly

[2] For the purposes of this study, media literacy training was operationalized as a 50-60 minute lecture and discussion about the persuasive techniques used by advertisers to sell products and how to detect strong and weak arguments in commercials. The learning objectives of the lesson were designed so that 1) students will be able to identify persuasive techniques used by advertisers and 2) students will be able to distinguish between strong and weak arguments in commercials. The experimenter introduced various media literacy principles by showing video clips from Consumer Reports' *Buy Me That!* series and selected broadcast commercials. Austin and Johnson (1997a; 1997b) used the first of these videos in their experiments to assess the effectiveness of media literacy training on children's decision-making about alcohol. The selected broadcast commercials were used to reinforce and help the subjects apply the principles introduced in the *Buy Me That!* videos. Seventy-three of the subjects were exposed to the

assigned to one of four groups. Each student was handed an index card with a number that had been generated from a random numbers table. Each card also had a teacher's name. Students were instructed to go to the appropriate teacher's classroom. Students viewed one of four versions of a Pringles Potato Chips commercial (discussed below) twice in their respective classroom. Afterwards, students filled out a colored, 12-page questionnaire[3] that was read out loud by the teacher. At the top of each page subjects were given brief instructions on how to complete the items on the page. At the bottom of each page, subjects were instructed to turn to the next page when they were told to do so. The first page, which included basic demographic questions, instructed students that they would be asked questions about the commercial they just saw. They were instructed to respond as best that they could. The second page asked students to list their thoughts about the commercial and then go back and rate those thoughts as positive or negative. The third page asked students to list the arguments they recalled in the commercial. The fourth and fifth pages included measures of attitude toward the product and attitude toward the ad, respectively. Pages six and seven included items that measured subjects' attitude toward television advertising in general. Items on pages eight and nine served as manipulation checks for the media literacy training lesson while pages 10 and 11 asked questions about peripheral cues contained in the commercial. The final page served as a measure of the overall persuasiveness of the commercial. The last question on page 12, which asked if subjects had seen the "Bill Nye the Science Guy" video, served to double-check that subjects were filling out the appropriate questionnaire. After all items were completed, subjects placed the index card they had received inside their questionnaire and the teacher collected them. Students were debriefed and thanked for their participation in the study.

The Commercial

Several commercials were reviewed and a nationally broadcast Pringles Potato Chips[4] commercial with a music bed and without voice-over[5] was identified for use in the experiment. The

50-60 minute media literacy training session while the other 75 subjects watched an episode of "Bill Nye the Science Guy" on caves and engaged in a discussion about the program content.

[3] Colored questionnaires corresponded with level of argument quality and number of arguments in each commercial as well as whether subjects were in the control or experimental group.

[4] A pretest was conducted to identify the product of interest to be used in the experiment. A product that generated moderate attitudes but was high in personal relevance was desired. Eighteen subjects aged 8-12 years old were administered a 23-page questionnaire that asked them to rate 21 consumer products. The first and second pages, respectively, asked for demographic information and provided examples of how to complete the form. The same 12 items were asked about all 21 products. The first six items represented an attitude toward the product scale developed by Stayman and Batra (1991). The scale was highly reliable, with a Cronbach's alpha of .98. The final six items represented the General Scale to Measure Involvement (GSMI), which was developed by Traylor and Joseph (1984). The GSMI was highly reliable as well (α = .88). Subject responses were analyzed and potato chips were identified as a product that elicited moderate attitudes but high involvement. Therefore, a potato chips commercial was sought.

[5] A voice-over free commercial was necessary to effectively manipulate argument quality and number of arguments.

commercial shows young children[6] (approximately 8-12 years old) in several scenarios enjoying Pringles Potato Chips. The theme of the commercial is "Once you pop, the fun don't stop." The music bed plays throughout the 30-second commercial with the lyrics "I want Pringles" repeating.

To test the proposed hypotheses, four different voice-overs were written and added to the Pringles commercial. The four versions represented various levels of argument quality and number of arguments consistent with previous research by Petty and Cacioppo (1986).

Design

The hypotheses suggested the need for eight experimental groups. Subjects either received media literacy training or watched the control video about caves. Subjects in both the control and experimental groups viewed one of the four versions of the Pringles Potato Chips commercial. The four versions of the commercial were 1) strong argument quality x high number of arguments; 2) strong argument quality x low number of arguments; 3) weak argument quality x high number of arguments; and 4) weak argument quality x low number of arguments. Therefore, the study used a 2 (strong vs. weak argument quality) x 2 (high vs. low number of arguments) x 2 (control vs. experimental group) between-subjects factorial design.

To ensure that the experimental manipulations were responsible for differences among groups, the groups had to be equivalent prior to the experiment. Random assignment to one of the four groups was employed to be able to infer treatment-caused changes in this study. Therefore, as noted above, subjects randomly numbered off by twos for inclusion in either the control or experimental groups. From these groups, subjects were assigned to the four groups representing the levels of argument quality and number of arguments using a random numbers table.

RESULTS

Analysis of variance (ANOVA) was used to test effects of argument quality, number of arguments, and media literacy training on active cognitive processing, attitude toward the product, attitude toward the ad, attitude toward TV advertising in general, and attention to peripheral cues. A summary of the findings appears below.

[6] There were approximately 16 males and 14 females depicted in the commercial. The racially diverse characters (African

Demographic Data

One hundred forty-eight subjects participated in the study. Of those, 54 percent (n = 80) were male and 46 percent (n = 68) were female. Subjects ranged in age from 8 to 12 (M = 10, SD = .79). Ninety of the subjects were in the fourth grade and 58 were fifth graders. Seventy-nine percent of the subjects were white, 15 percent black, two percent Asian, and the remaining four-percent reported being Native American or Other.

Manipulation Checks

Media Literacy Training

Media literacy training was manipulated by exposing the experimental group of subjects to a 50-60 minute media literacy lesson. Subjects in the control group were not exposed to the lesson; they watched and discussed a television program about caves. It was suggested that subjects exposed to media literacy training would have greater ability to process the Pringles Potato Chips commercial. Increased ability would increase the likelihood of following the central route to persuasion as suggested by the ELM (Petty & Cacioppo, 1986b). In contrast, subjects not exposed to the media literacy lesson would have less ability to process the commercial message via the central route. Therefore, control group subjects would be more likely to follow the peripheral route to persuasion (Petty & Cacioppo, 1986b).

To test whether subjects attended to and remembered the media literacy lesson subjects were asked how much they agreed or disagreed with 13 statements[7] about information contained in the media literacy lesson. Subjects who were exposed to the media literacy lesson were expected to score higher on the measure than subjects not exposed.

Factor analysis and reliability analysis produced two separate media literacy manipulation check scales. An independent-samples t-test found no significant difference between the control group and experimental group on the seven-item scale (t (142) = -.80, p < .43) or the six-item scale (t (139) = -1.64, p = .10). Therefore, the media literacy training manipulation check was unsuccessful.

American, Asian, and Caucasian) were seen in various costumes including a caveman, pirate, deserted islander, and astronaut.

Argument Quality

Argument quality was manipulated by varying the level of argument quality (weak vs. strong) within the four versions of the Pringles Potato Chips commercial. Pilot test[8] data provided statistical evidence (F (7, 161) = 5.86, $p < .000$) that the arguments used in the commercial versions were considered strong or weak by subjects similar to those who participated in the experiment.

Number of Arguments

Subjects in the different treatment groups were exposed to varying numbers of arguments within the versions of the Pringles Potato Chips commercials. Therefore, number of arguments was manipulated by including a high number (6) or a low number (2) of arguments in the various commercial versions. It was expected that subjects in the control group would pay more attention to the number of arguments contained in the commercial than the quality of the arguments. In contrast, subjects in the experimental group would not pay as much attention to the number of arguments; rather, they would scrutinize the quality of the arguments.

To test whether subjects attended to and remembered the number of arguments, they were asked to disagree or agree with two statements. The statements were: "The commercial presented many (a lot of) reasons (arguments/claims) for eating Pringles Potato Chips" and "The commercial presented few (not a lot of) reasons (arguments/claims) for eating Pringles Potato Chips." Subjects' responses to the second item were reversed coded. Subjects who were exposed to a high number of arguments were expected to score higher on the first statement and lower on the second. Subjects exposed to a low number of arguments were expected to score lower on the first statement and higher on the second.

Unexpectedly, the manipulation was not successful. An independent samples t-test compared means of subjects exposed to a high number of arguments and subjects exposed to a low number of

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[7] Although sixteen items were presented to subjects, only 13 were used to assess the effectiveness of the media literacy lesson because three items were bogus.

[8] Based on previous research by Petty and Cacioppo (1986b), the researcher generated a series of 26 arguments that were perceived to be either strong or weak statements about Pringles Potato Chips. A group of subjects similar to those who would be used in the actual experiment were asked to rate the arguments in a pilot test. Subjects were asked to rate the persuasiveness of each statement by responding to a four-item semantic differential scale. Semantic differentials are common measures of peoples' attitudes (Osgood, 1965). To measure the quality of arguments, subjects were asked to rate each statement (on a seven-point scale) on four dimensions: Don't want it/Want it; Doesn't make sense/Makes sense; Not believable/Believable; Weak/Strong. Twenty-nine subjects participated in the argument quality-rating test. Subjects ranged in age from 10-11 years old, 48 percent were male and 52 percent were female. The mean score was calculated by averaging responses on the four dimensions used to rate each argument. The median score was 4.75 with means ranging from 1 to 7. The lowest eight means were identified as weak arguments while the highest eight means were selected as strong arguments. To assess whether the strongest and weakest arguments were significantly different from one another, a multiple analysis of variance (MANOVA) was conducted. Results indicated a significant difference among means (F (7, 161) = 5.86, $p < .000$). Pairwise comparisons identified the weak argument seven (M = 4.35) as significantly different from strong argument seven (M = 3.80), but in the opposite direction. Weak argument eight (M = 5.13) and strong argument eight (M = 5.14) were not significantly different. Therefore, only six weak and six strong arguments were used to develop voice-over copy for the Pringles Potato Chips commercial.

arguments. Mean scores were not significantly different among subjects exposed to a high number (M = 4.55) and subjects exposed to a low number (M = 4.78, t (144) = -.78, $p < .44$). The two-item scale produced a low Cronbach's alpha of .34. Therefore, this might be a reason the manipulation check was unsuccessful.

Further analysis compared the means of subjects on the single item, "There are many (a lot) of reasons (arguments/claims) for eating Pringles Potato Chips." Results of the independent samples t-test revealed no significant difference among subjects (M = 4.81, high number; M = 5.40, low number; t (145) = -1.57, p = .117). When means of subjects' responses were compared on the single item, "The commercial presented few (not a lot of) reasons (arguments/claims) for eating Pringles Potato Chips," no significant difference was found (M = 4.30, high number; M = 4.23, low number; t (145) = .17, $p < .87$). These results confirm that the manipulation check for number of arguments was not successful.

Attention to Additional Peripheral Cues

Two different scales measured attention to additional peripheral cues. One-way ANOVA results for the first attention to peripheral cues scale, which assessed if subjects liked the kids in the commercial, indicated a significant difference among the experimental (M = 3.11) and control (M = 3.80) groups (F (1, 145) = 5.43, p = .021). A significant difference was also found between the experimental (M = 3.08) and control (M = 3.82) groups (F (1, 145) = 7.32, p = .008) for the second peripheral cues scale, which assessed the credibility of the announcer.

Persuasiveness of Commercial

The persuasiveness of the commercial was assessed for potential comparisons. A four-item scale, identical to the one used in the pilot test, was employed. However, subjects were not asked what they thought about each individual argument; rather, they were asked how persuasive they thought their version of the Pringles Potato Chips commercial was. Subjects rated the overall commercial on the following semantic differentials: Doesn't make me want Pringles/Makes me want Pringles; Doesn't makes sense/Makes sense; Not believable/Believable; Weak/Strong. Attitudes were gauged on a seven-point scale, with 1 and 7 representing the extremes. A three-way ANOVA (2 x 2 x 2) testing the persuasiveness of the commercial revealed a significant main effect for control (M = 4.74) versus experimental (M = 3.79) groups (F (1, 123) = 9.74, p = .002). No interactions or additional main effects were found.

Tests of Hypotheses

To test the general research question "Does media literacy training increase the likelihood of persuasion via the central route?" two hypotheses (see above) were proposed. It was expected that subjects in the experimental condition would follow the central route to persuasion while subjects in the control condition would follow the peripheral route.

To test these two hypotheses, subjects exposed to media literacy training (n = 73) were compared to subjects in the control group (n = 75) on each dependent measure. A one-way ANOVA for the first dependent variable, active cognitive processing, revealed no significant difference between the experimental (M = .69) and control (M = 1.03) groups (F (1, 145) = .73, p > .39). Therefore, Hypothesis 1 was not supported.

The same scale used for the manipulation check for number of arguments was used as the attention to the peripheral cue of interest scale. One-way ANOVA results indicated no significant difference among the experimental (M = 4.50) and control (M = 4.83) groups (F (1, 144) = 1.22, p = .271). Thus, Hypothesis 2 was not supported either.

Four hypotheses (see above) were proposed to test the effectiveness of media literacy training on changing children's attitude toward a particular advertised product that was of great personal relevance. It was expected that a three-way interaction between treatment (media literacy training or lack thereof), argument quality, and argument number would produce significant differences among subjects. It was thought that subjects exposed to media literacy training would have higher scores on attitude measures when strong arguments were used despite the number of arguments. Moreover, it was believed that subjects exposed to media literacy training would produce lower scores on attitude measures when weak arguments were used despite the number of arguments.

To test the four hypotheses a three-way (treatment x argument quality x number of arguments) ANOVA was run for each dependent variable. Results indicated no three-way interactions. Therefore, hypotheses 3-6 were not supported and must be rejected.

Further examination of the three-way ANOVA results revealed interesting findings. A two-way interaction was found for treatment group by number of arguments (M = .17, control x high number, M = 1.89; control x low number; M = .92, experimental x high number; M = .39, experimental x low number) on active cognitive processing (F (1, 139) = 8.71, p = .004). Main effects were found for treatment group (M = 5.21, control; M = 4.17, experimental) on attitude toward the product (F (1, 121) = 18.29, p < .000) and

attitude toward the ad (M = 4.73, control; M = 3.59, experimental; F = (1, 111) = 16.82, p < .000). A main effect was found for treatment group on the perceptions of the personal and social benefits or costs of TV advertising scale (M = 4.07, control; M = 3.04, experimental; F (1, 133) = 16.56, p < .000), which was one of the scales that measured attitude toward TV advertising in general. However, the perceptions that TV advertising is deceptive scale, which was the other measure of attitude toward TV advertising in general, did not produce a main effect for treatment group (M = 4.89, control; M = 5.06, experimental; F (1, 136) = .47, p < .50). Both scales that measured additional peripheral cues produced a main effect for treatment group (M = 3.77, control; M = 3.13, experimental; F (1, 139) = 4.69, p = .032; M = 3.80, control; M = 3.07, experimental; F (1, 139) = 7.21, p = .008).

A main effect was found for argument quality on attitude toward the product (M = 4.95, strong quality; M = 4.42, weak quality; F (1, 121) = 4.76, p = .03), attitude toward advertising in general (perceptions that TV advertising is deceptive) (M = 5.30, strong quality; M = 4.65, weak quality; F (1, 136) = 7.44, p = .007), and attention to an additional peripheral cue (liking kids in the commercial) (M = 3.85, strong quality; M = 3.05, weak quality; F (1, 139) = 7.51, p = .007).

DISCUSSION

This study investigated the effectiveness of media literacy training on children's responses to persuasive messages within the framework of the Elaboration Likelihood Model of persuasion. More specifically, an experiment was conducted to determine if media literacy training increased the likelihood of children following the central route to persuasion rather than the peripheral route.

Tests of Hypotheses

The first group of the hypotheses suggested that exposure to media literacy training would increase the likelihood that subjects will follow the central route to persuasion and no exposure to media literacy training would increase the likelihood that subjects will follow the peripheral route to persuasion. It was predicted that media literacy training would provide the ability necessary to scrutinize arguments more critically, thus using central processing. However, no differences were found for the first two hypotheses.

The second group of hypotheses, which numbered four, investigated the effectiveness of media literacy training on changing children's attitudes toward a particular advertised product that was of great personal relevance. It was predicted that a three-way interaction between treatment (media literacy training or lack thereof), argument quality, and number of arguments would produce significant differences among subjects. As with the first set of hypotheses, no significant differences in attitude were found for subjects based on level of treatment, argument quality, or number of arguments.

In sum, the relationships predicted about the effectiveness of media literacy training on children's responses to persuasive messages within the framework of the Elaboration Likelihood Model of persuasion were not supported. Data analysis showed that there were no differences among groups of subjects when level of treatment, argument quality, and number of arguments were considered. However, some interesting findings were revealed during a post hoc analysis of the data. A summary of the findings is presented in the next section.

Post-Hoc Analysis

Although no three-way interaction was found between the independent variables, other unexpected findings emerged when ANOVA results were examined more closely. A two-way interaction was found for treatment group by number of arguments on active cognitive processing (F (1, 139) = 8.71, p = .004). Simple effects tests showed that subjects in the control group exposed to a low number of arguments (M = 1.89) had more favorable thoughts while watching the Pringles Potato Chips commercial than other control group and experimental group subjects. Experimental subjects exposed to a high number of arguments (M = .86) had more favorable thoughts than experimental subjects exposed to a low number of arguments (M = .51) and control subjects exposed to a high number of arguments (M = .14). If experimental group subjects learned to scrutinize commercial messages more closely as a result of media literacy training, then one might expect the number of favorable thoughts to be less than control group subjects. However, the findings reveal that control group subjects exposed to a high number of arguments had less favorable thoughts than any other subjects did. Furthermore, a high number of arguments produced more favorable thoughts for experimental subjects, while a low number of arguments produced more favorable thoughts for control subjects. Therefore, a logical explanation for these curious findings is difficult to suggest. Both manipulation checks for these findings were unsuccessful; therefore, no definitive conclusions can be drawn.

Main effects for treatment group were found for attitude toward the product, attitude toward the ad, and perceptions of the personal and social benefits or costs of TV advertising. These results suggest that media literacy training had some influence on children's attitudes. The findings indicate that subjects in the control group had a more positive attitude toward Pringles Potato Chips after watching the commercial than subjects in the experimental group. Similar results for attitude toward the ad were found as well. One explanation for these findings is that media literacy training made subjects skeptical of the message and the commercial because they were more aware of the techniques used by advertisers to try and persuade viewers. The attitude toward the ad measure was included to ensure that the attitude toward the product was the only dimension being measured because commercial viewers might like a commercial, but not like a product and vice versa. These two measures suggest that experimental subjects had a negative attitude toward the product and the commercial.

Two measures of attitude toward advertising in general (perceptions of the personal and social benefits or costs of TV advertising and perceptions that TV advertising is deceptive) were used in this study. It was expected that there would not be any differences between groups on the dependent variable, attitude toward advertising in general, because the two groups were considered equivalent. Results indicated that both groups thought TV advertising was deceptive ($\underline{M}$ = 4.89, control; $\underline{M}$ = 5.06,. experimental), but the experimental group ($\underline{M}$ = 3.04) had more negative perceptions of the personal and social benefits or costs of TV advertising than the control group ($\underline{M}$ = 4.07). One could argue that the two groups were equivalent in terms of their perception of TV advertising as being deceptive because of personal experience with products. For example, subjects may have seen a toy commercial, accepted the claims about the toy's performance, but found out after purchasing the toy that it did not perform as the commercial suggested.

Subjects diverged on their perceptions of the personal and social benefits or costs of TV advertising. One explanation for this disparity is that treatment effects may have occurred. Responses from subjects exposed to media literacy training might have been influenced by their newfound knowledge about the persuasive techniques used by advertisers.

Given the results, it is difficult to draw definitive conclusions about the measures for attitude toward advertising in general. Further testing must be done to determine the best possible scale for measuring attitude toward advertising in general.

Interestingly, measures for attention to additional peripheral cues also produced main effects for treatment groups (control vs. experimental). Although the peripheral cue of interest was number of arguments, other items were included that measured how much subjects liked the kids in the Pringles commercial and the credibility of the announcer. Subjects in the experimental group (M = 3.13) liked the kids in the commercial less than subjects in the control group (M = 3.77). Experimental subjects also found the announcer to be less credible (M = 3.07) than the control subjects (M = 3.80). These results cannot be used to offer support for the hypotheses that suggested that media literacy training would increase the likelihood of subjects scrutinizing message arguments and that a lack of training would tend to increase the likelihood that subjects would pay more attention to the peripheral cue of interest. However, the findings do provide potential areas of future study. If future studies establish that media literacy training is a moderating variable in the persuasion process, then the peripheral cue of interest could be changed to liking the kids in the commercial and announcer credibility to determine if certain cues receive more attention than others during the persuasion process.

Main effects were found for argument quality on attitude toward the product and attitude toward advertising in general (perceptions that TV advertising is deceptive). Subjects exposed to strong quality arguments (M = 4.95) had more favorable attitudes toward Pringles Potato Chips than subjects exposed to weak quality arguments (M = 4.42). This finding suggests that the strong arguments contained in the commercial message were compelling enough to produce favorable attitudes among subjects exposed to arguments of a strong quality. This would be expected since the pilot test for argument quality produced very distinct strong arguments and weak arguments. The differences found among the groups provide additional evidence that the quality of the arguments were distinctively strong and weak.

The difference among the groups for one of the attitude toward advertising in general measures (perceptions that TV advertising is deceptive) is intriguing. Strong quality argument subjects (M = 5.30) felt TV advertising was more deceptive than weak quality argument subjects did (M = 4.65). This finding is difficult to explain because one would expect that the strong arguments would be more compelling and produce more favorable attitudes. The findings indicated the opposite happened. Subjects exposed to weaker arguments felt that advertising was less deceptive than those exposed to strong arguments. Further research is needed to determine how important this finding might be in terms of the persuasion process or if the results are an anomaly.

An odd finding emerged for one of the attention to peripheral cues measures (liking kids in the commercial). Subjects exposed to strong arguments (M = 3.85) liked the kids in the commercial more than subjects exposed to weak arguments (M = 3.05). However, both groups had neutral or fairly weak feelings about the kids in the commercial. One explanation for the finding is that subjects exposed to weak arguments may have had an overall negative feeling toward the commercial. However, there was no difference among the two groups for announcer credibility; therefore, this finding could be an aberration.

Study Limitations

The Manipulations

The manipulation checks for media literacy training and number of arguments were not successful. This poses a problem because there is no statistical evidence to suggest that exposure to the manipulations actually made a difference among the groups of subjects.

Media literacy training. Although the media literacy training lesson was pretested with children of the same age group, it was not as effective as expected. One reason for the lack of effectiveness might be the setting of the lesson for the fourth graders (n = 90). The only room available for the lesson at the time was a large room without desks. Subjects sat very close to one another on the floor. Many of the examples used in the lesson initiated enthusiastic reactions, which included laughing, shouting, and physical movement. Such reactions led to increased energy and restlessness. Several subjects moved (e.g., walked or crawled) around the room despite being reprimanded by the experimenter for doing so. Four subjects had to be separated for continuous talking and physical contact. Therefore, the lack of a traditional classroom setting may have contributed to the subjects' lack of attention to the lesson. In addition, a regular classroom teacher was not present during the presentation by the experimenter. All of the teachers were monitoring control group subjects in their respective classrooms. The presence of a teacher might have alleviated behavioral problems and helped focus students' attention. Fifth graders (n=58) were exposed to the lesson seated at desks with a teacher present.

Another explanation for the unsuccessful manipulation is the single exposure to the lesson. Ideally, media literacy training should be an on-going process. However, scheduling restraints limited the amount of time that could be spent with the students. A future study should expose the students to media

literacy training more than once. Multiple exposures would be more like typical lessons taught in other subjects. Teachers typically spend several class periods on various units.

An additional explanation deals with the length of the lesson. Subjects were taught media literacy training skills for 50-60 minutes. Perhaps an hour-long lesson for fourth and fifth graders is too long. Shorter lessons, but more frequent lessons, might have been more effective. Furthermore, if the lecture/discussion had been coupled with an activity the manipulation might have been more successful.

A further explanation focuses on the questionnaire items. Although the scale items were directly related to the content of the lesson, the scale had not been previously tested. Factor analysis revealed that two dimensions were being measured by the scale items. Further testing is needed to develop a valid and reliable manipulation check.

A final explanation is that media literacy training does not work within the context used in this study. Media literacy training may not be an effective moderating variable of persuasion within the ELM. One could argue that the media literacy training lesson did not provide the ability necessary to produce central processing within subjects. Furthermore, the video used in the lesson was designed as a children's survival guide to advertising. The need to have a survival guide to advertising implies that advertising is inherently negative; this implication is clear in the video because it points out the "tricks" that advertisers use to sell products. Thus, the lesson may have trained subjects to be skeptics of advertising rather than more responsible consumers. Further testing of the lesson is needed to determine if content variations produce different results.

Number of arguments. There are two possible explanations for the unsuccessful manipulation of number of arguments. First, the two-item scale that asked subjects about the number of arguments in the Pringles commercial were ambiguous. The two items asked if there were many or few arguments in the commercial. A more appropriate measure would have been a single self-report measure. Subjects could have been asked, "How many arguments were in the commercial you just saw?" This would have been more direct and easier to interpret.

The second explanation is that subjects may not have experience counting arguments in television commercials. Although number of arguments was addressed in the media literacy training lesson, subjects may have had a difficult time distinguishing between all the claims made in the commercial. Previous studies (Petty & Cacioppo, 1984; Petty, Cacioppo et al., 1981) used print advertisements, which made it easier to count the number of arguments.

The Scales

Several of the scales used in the experiment were previously used in other attitude studies. Although these scales were designed for adults, they all had high reliabilities. Problems were encountered with the scales not previously tested. These include the media literacy training manipulation check (noted above) and the attention to peripheral cues scales. Factor analyses revealed more than one dimension being measured by the items in the scales. Further scale development and testing is necessary to identify valid and reliable scales.

The Subjects

The scales measuring attitude toward advertising in general produced contradictory results. The scale assessing perceptions that TV advertising is deceptive suggested that there were no differences among subjects in the treatment groups (media literacy training or lack thereof). However, the scale assessing perceptions of the personal or social benefits or costs of TV advertising revealed a difference between the two groups. These findings call the equivalency of the two groups into question. As noted in an earlier section, the media literacy training may have influenced the experimental subjects' perceptions of the personal and social benefits or costs of TV advertising by making them even more skeptical of commercial messages and producing more negative attitudes toward advertising. Future studies might employ a pretest-posttest experimental design to eliminate this treatment effect and ensure equivalency among the groups.

Implications

Despite the limitations of the study, the findings suggest that there are potential differences between experimental and control subjects' attitudes toward the advertised product, but definitive conclusions about media literacy training's effectiveness cannot be drawn. However, results of this study can provide a foundation for future research.

First, perhaps the manipulation check for media literacy training worked, but not in the way expected. It was predicted that media literacy training would provide subjects with the ability to scrutinize and evaluate critically commercial messages in a systematic and objective manner. However, the findings suggest that media literacy training may have contributed to more negative attitudes for experimental subjects toward Pringles Potato Chips as well as the commercial. This implies that the media literacy training may make children more skeptical of commercials and products being advertised.

The data indicate that all subjects, whether exposed to training or not, perceive advertising to be deceptive. If this is the case, then what purpose does media literacy training serve other than increasing skepticism toward advertising?

It is important for children to learn to question the media messages they encounter; however, media literacy is more than just teaching children to be skeptics. The overall goal of media literacy in terms of advertising is to make children scrutinize advertised messages so that they will become better consumers. If children can become more aware of the persuasive techniques used by advertisers, then they will be able to analyze commercials more critically and make better decisions about products. Moreover, media literacy's overall goal is to equip individuals with critical thinking and viewing skills that will help them evaluate media messages critically as well as help them make other decisions throughout life. Critical thinking has been a staple of education throughout the ages. What has changed over the years is the medium through which educators teach such skills. The printed word was the dominant medium until radio and television developed. Today, media literacy training teaches critical thinking and viewing skills by using all media, whether print or electronic. Children are multimedia consumers; therefore, it makes sense to use the media they encounter daily to teach them to be critical thinkers. Therefore, it is important that the media literacy training used in this study be revised so that it more accurately teaches critical thinking skills rather than skepticism.

Second, if a single exposure to a media literacy lesson can produce differences among groups as the findings suggest, then media literacy training built into existing school curricula could be very effective at creating critical viewers. Although 48 of the 50 states already have a media literacy component built into their existing curricula (Kubey & Baker, 1999), more efforts need to be made to recognize the benefits of media literacy training on students. This study contributes to the belief that media literacy makes a difference in children's abilities to evaluate media messages more critically, and it can be used as an example of how media literacy equips students with skills that can be used throughout their lives.

Future Research

This study is a foundation for future experimental studies that will test the effectiveness of media literacy training on children's responses to persuasive messages. Given the results of this study, several areas of future research are needed to provide more definitive answers to the research question, "What are the effects of media literacy training on children's attitudes toward persuasive messages?"

Future research must focus on validating the media literacy training manipulation check scale. A study could be designed using the same media literacy lesson and manipulation check scale used in this study. Four groups of subjects could be presented the lesson and asked to fill out the questionnaire. A fifth group could serve as a control group. Findings would validate the scale and provide evidence of its reliability or suggest that changes need to be made.

A replication of this study is needed to provide statistical evidence that media literacy does work. By replicating the study with valid measures more definitive conclusions can be drawn about the effectiveness of media literacy training. One change that could be made to the study is to make it a pretest-posttest experimental design. This change would provide more support for equivalent groups of subjects at the start of the study. Another change could be to expose subjects to the media literacy lesson more than once. A 4 x 2 x 2 design would be useful to compare control subjects with subjects that are exposed to media literacy training once, for a week, and for two weeks. One would expect larger effects for subjects exposed for two weeks, but it would be interesting to see how great the difference between groups might be. Furthermore, delayed posttest effects could be measured after three months to determine if they were lasting or not. Measuring the delayed effects would also address the contention that persuasion via the central route is more enduring than persuasion via the peripheral route.

The current research takes a step toward producing empirical evidence that suggests media literacy training has an effect on children's attitudes toward persuasive messages. However, additional investigations are needed to answer more completely whether media literacy is a moderating variable within the Elaboration Likelihood Model of persuasion.

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