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The effects of an advertising-based intervention on critical thinking and media literacy in third and fourth graders

Susan L. Stanley

Moraine Park Technical College, USA

Chris Lawson

University of Wisconsin, USA

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Corresponding Author:
Susan Stanley
sstanley1@morainepark.edu

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ABSTRACT

The goal of this study was to assess whether a short, media literacy intervention could effectively support third- and fourth-graders' abilities to interpret and produce persuasive arguments. The intervention was delivered to students ($N = 50$) and focused on the knowledge and skills associated with advertising literacy. Students participated in tasks that measured changes in their advertising knowledges, their abilities to evaluate argumentative messages, and their abilities to develop a written persuasive argument. Results indicate that the instructional intervention boosted students' advertising knowledge and their abilities to evaluate and produce effective arguments. This study provides important insights into the impact of media literacy lessons on children's understanding and application of persuasion knowledge in everyday contexts.

Keywords: *media literacy, persuasion knowledge, advertising, critical thinking skills, argumentation*.

INTRODUCTION

In a world filled with "fake" and "biased" news, an increased dependence on media, and a constant barrage of pop-up advertisements, there is considerable value in acquiring the skills to think critically about digital media. With this issue in mind, it has become clear that schools bear some of the responsibility in supporting media literacy (Baker, 2012; Hobbs, 2004; Livingstone, 2004). Yet, the narrowing of the curriculum to focus almost exclusively on academic skills, such as reading, writing, and arithmetic, has left little room for teachers to dedicate instructional time to teaching media literacy skills. Thus, teachers have addressed this issue by implementing media literary into lessons in science (Belova & Eilks, 2016), math (Casey, 2013), and language arts (Morrell, 2012). Here, we describe a simple and short media literacy lesson delivered to groups of third and fourth grade students and implemented as a component of the students' library instruction time. We were able to demonstrate that this lesson not only increased students' knowledge about the persuasive tactics used by advertisers but also had a positive impact on a central component of critical thinking – argumentation skills. In the remainder of this paper, we provide a brief overview of the literature on the development of advertising knowledge, describe our project and the results from our study, and finally conclude with a discussion about the importance of committing instructional time to helping children develop media literacy skills.

Advertising literacy

For this study, we chose to focus on advertising literacy because advertisements are pervasive in children's lives and advertisers are steadfast in their use of tactics to persuade children (Rozendaal et al., 2011). Thus, it is important to equip young students with the skills to help them remain vigilant against these persuasive messages (Stanley & Lawson, 2018). A review of the literature on the development of advertising literacy reveals that between the ages of eight to twelve years, there is a significant shift in children's knowledge about the goals and intentions of advertisers. By about seven to nine years of age, children understand the persuasive and selling intent of advertisers yet they still struggle to spontaneously access this knowledge and often succumb to the effects of advertising (Blatt et al., 1972; Brucks et al., 1988; John, 1999). It is not until about twelve years of age that children have developed a more critical stance toward advertising and its intention to get consumers to buy a product (John, 1999; Young, 1990). For example, Freeman and Shapiro (2014) found that eight- to twelve-years-olds were aware of explicit tactics used by advertisers (e.g., having a famous person use a product) but only the older group of children were also aware of the implicit tactics used by advertisers (e.g., get someone to use a product in a public place).

Understanding the source of these changes is important for determining the extent to which media literacy interventions can be effective. For example, according to the Persuasion Knowledge Model (PKM), individuals rely on what they have learned about advertisements to determine how to think about a new message (Friestad & Wright, 1994). The PKM suggests that an individual's knowledge on a specific topic in addition to their knowledge of persuasive tactics results in their ability to cope with the persuasive attempt. In other words, advertising literacy is experience-dependent, such that with enough experience and instruction young children can learn to think critically about advertisements. From this perspective, the biggest constraint on children's ability to develop media literacy skills is the availability of input to help them acquire these skills.

For this reason, support for the PKM comes from studies that reveal that instructional interventions are effective at promoting the development of advertising literacy skills in children (Admongo, 2012; Nelson, 2015). Nelson (2015) found that a series of six 90-minute lessons administered to eight- to nine-year-olds increased students' understandings of selling intent, persuasive tactics, and target audiences. Recent evidence suggests that shorter interventions can also be effective (Christenson, 1980; Brucks et al., 1988; Buijzen, 2007, 2009; Roberts et al., 1980; Stanley & Lawson, 2018). For example, Roberts et al. (1980) found that showing seven- to ten-year-olds a 15-minute instructional film about the purposes of advertising (e.g., "The Six Billion Dollar Sell") led these students to be more skeptical of ads. Still other interventions indicate that instruction on current advertising tactics improves children's understanding of persuasive tactics (An et al., 2014; Wollslager, 2009).

Thus, there is compelling evidence to suggest that short interventions successfully boost media literacy in young students. The present study explored a slightly different question. Our motivation was to examine whether a single advertising literacy intervention would impact students beyond the domain of media literacy.

We were specifically interested in argumentation, given that advertising can be viewed as a form of argument, insofar as advertisers make claims and provide evidence to support their claims in the hope of persuading their audiences. Although a written argument and a commercial might share different surface features, they share many "deep" or structural features. Moreover, argumentation is a central component of critical thinking and represents a skill that applies to a range of academic tasks.

To explore this issue, we designed a pretest/posttest study delivered to a group of third and fourth grade students during their weekly visits to their school library. We were interested to see if a short advertising-based intervention (~25 minutes) would, in addition to increasing advertising literacy, have a prolonged effect on students' abilities to evaluate and generate effective persuasive arguments.

METHOD

Participants

Students were recruited from an elementary school within a suburban, Midwestern U.S. school district. A total of 112 third and fourth graders (all between the ages of eight to ten years) participated in the lessons while only those with parental consent (N=50) participated in the pretest and posttest. We selected these third and fourth grades because they cover the range of ages (eight to ten years) that represent time during which individuals begin to develop, but have not yet fully mastered, the capacity to understand and reason about advertising-related content (i.e., selling intent, persuasive intent, and skepticism toward advertising) (Friestad et al., 1998; Moses & Baldwin, 2005; Rozendaal et al., 2009).).

Materials

Pretest/Posttest assessments. Students were given a set of pretest and posttest items used to assess the effects of the intervention (See Table 1 for an example of each type of item that was presented to participants). One of the pretest measures was an adapted version of the *Advertising Literacy Scale* (Rozendaal et al., 2016). Due to the time constraints, we selected 12 items from the original 25-item scale. For example, we eliminated redundant items (e.g., "Do you think commercials are truthful?", "Do you think commercials tell the truth?", and "Do you think commercials lie?"). The adapted scale for the current study incorporated five subcategories of advertising knowledge: 1) understanding selling intent, 2) understanding persuasive intent, 3) understanding persuasive tactics, 4) skepticism toward advertising, and 5) understanding of advertisers' bias. Each of the five subcategories had two items except for *understanding persuasive tactics*, which had four items. Pearson correlations revealed significant relationships between items of each subcategory except for understanding persuasive tactics, indicating reliability within four subcategories (selling intent, r=.42, n=94, p<.02; persuasive intent, r=.39, n=94, p<.02; advertisers' bias, r=.23, n=94, p=.03; and skepticism toward advertising, r=.42, n=94, p<.02). For each of the 12 items, participants were asked to respond by selecting from four predetermined answers. There were three different coding schemes based on the type of responses given by students. A higher score represented a higher advertising literacy for the participant. For *understanding selling intent* and *understanding persuasive intent,* the responses were coded as follows: 4 = yes, for sure; 3 = yes; I think so; 2 = no, I don't think so; and 1= no, certainly not. For *understanding advertising bias* and *skepticism toward advertising*, responses were coded as follows: 4 = very often, 3 = often, 2 = sometimes, and 1 = never. For *understanding persuasive tactics*, responses were coded according to why an advertiser used the advertising tactic (Rozendaal & Buijzen, 2011). For example, the tactic of using a product demonstration in an ad is most often chosen by advertisers so that the audience can learn about the product. Therefore, the coding of the four responses was 4 = to learn about the product, 3 = to believe what the ad says, 2 = to recall the ad, and 1 = to like the ad.

We included two assessments to measure the impact of this intervention on argumentation skills. The *Argument Evaluation Task* measured the ability to evaluate the quality of arguments. Items were modeled after those used by Larson et al. (2009). A total of four items were shown to students. Each item included a grouping of three sentences, which were each followed by an additional statement, producing one of three quality levels of an argument (i.e., acceptable, unwarranted, and unsupported) (See Table 1). An acceptable argument is one in which the reasoning supports the claim effectively (e.g., "Kids should not be allowed to watch movies because there is often violence and bad language."). An unwarranted argument is one in which the reason does not effectively support the claim (e.g., "Kids should not be allowed to watch movies

because they cost a lot to produce.") An unsupported argument provides no support but simply states the claim (e.g., "Kids should not be allowed to watch movies."). Participants were told they might not agree with the statements, but their tasks were to choose an answer based on which argument had the best support and was most logical. Responses to each of the four items were coded in relation to which of the three sentences participants selected. For each item, a response received a score of "2" if the participant selected the acceptable statement; a response received a score of "1" if the participants selected the unwarranted statement, and a response received a score of "0" if the participants selected the unsupported statement.

The final pretest/posttest measure was the *Written Persuasive Argument Task.* Children were asked to choose one scenario they would like to use as a topic for a persuasive argument. This task was left open-ended to provide students the opportunity to write about a topic about which they felt strongly and had sufficient content knowledge. This task was adapted from studies by Clark and Delia (1976), Knight and McNeill (2014), and Kuhn and Udell (2003).

Responses were coded for several key elements of a good argument. The first was the function of the argument (Kuhn & Udell, 2003; Kuhn et al., 1997). Written arguments were coded a "2" if the reasons provided were linked to the purpose of the topic in the claim (e.g., "You should buy me new clothes because the clothes I have now do not fit"). A "1" identified arguments in which the reasons did not provide evidence of the purpose of the claim. For example, the reasoning of "Mom, you should buy me new shoes because they look cool" does not indicate the purpose of needing new shoes (i.e., old ones do not fit, need shoes for walking, running, playing basketball, etc.). A written argument was coded "0" if the justification was based on sentiment or appealing to the majority (e.g., "you should buy me new clothes because all of my friends get new clothes all of the time").

Table 1. *Examples of type of pretest/posttest item*

Measure	**Example**
Advertising literacy scale	How often do you think you can believe television commercials? A. Never B. Sometimes C. Often D. Very Often
Argument evaluation task	1a. Kids should be allowed to have cell phones. 1b. Kids should be allowed to have cell phones in case they need to contact someone in an emergency. 1c. Kids should be allowed to have cell phones because they look cool.
Written persuasive argument task	Write an argument in which you try to persuade someone (examples: your parent, friend, sibling, teacher) to do or get something you want (examples: get a puppy, buy a new iPad, play your favorite game, get dessert, eat what you want for dinner, watch your favorite movie, buy new clothes/shoes).

Another key element was the perspective the participant included in their argument (Kuhn & Crowell, 2011). A higher score was given to an argument if the participant looked beyond their perspective and integrated any counterarguments when supporting their claim. Scores ranged from three to zero. If the argument included negatives of the favored position or positives of the opposing side, the argument was coded as a "3" for an integrative perspective (e.g., "I know you think a new computer is too expensive, but I could use some of my allowance to help pay for it."). If a participant included information of the opposing side, their argument was coded as a "2" for having a dual perspective (e.g., "You need to clean my room so that you can have some alone time."). A "1" indicated the participant only included positive of their own position of the claim (e.g., "I want to go to Florida because the weather is warm."). Finally, a "0" was given if it was not a valid argument or no reasons of support were provided.

Finally, the written persuasive argument was coded by the number of reasons a participant used to support their claim. A reason was counted as "1" if it was a full thought that supported the claim of the persuasive argument whether it was relevant or not to the claim. For

example, the argument "We should have dessert tonight because I completed my homework, and it would be a delicious treat," would count as two reasons to support the claim (i.e., "because I completed my homework" and "it would be a delicious treat").

The written responses were coded by two independent raters. Cohen's κ analyses revealed there was high agreement between the two raters for the overall function ($\kappa = 0.83$, $p < 0.005$) and perspective of the argument ($\kappa = 0.85$, $p < 0.005$).

Procedure

The pretest, intervention, and posttest were administered on separate days, delivered a week apart from each other. The study was conducted during the school's Library and Technology class, which students attend once a week for 35 minutes. Below, we describe the procedures for each of the three meetings.

Week 1: Pretest. Students came to their Library and Technology classes at their regularly scheduled times. The Library and Technology teacher reminded students of the parental consent forms that were sent home and the connection they had with the next few weeks of class. The researcher introduced herself and handed out the pretests to the participants whose parents signed the consent form. Those students in the class who did not have parental consent were given a worksheet (e.g., crossword puzzles, word searches that related to topics they were learning in their other classes) to complete quietly while the participants took the pretests. All three measures (*Advertising Literacy Scale, Argument Evaluation Task* and *Written Persuasive Argument Task*) were printed on a double-sided worksheet. Participants were asked to write their names at the top of the pretest in order to connect pretest and posttest scores to the same participant. The directions for each measure were printed on the worksheet. Each item was read aloud to avoid any cognitive demands of reading and to ensure the group was following along with the correct item. The measures were administered by the researcher or the students' Library and Technology teacher. Participants were reminded that there was no right or wrong answer to any of the items. They were also ensured that their performance on these tasks had no impact on their grades for other classes.

Participants were first given the *Advertising Literacy Scale* and told to listen to the question and answers read aloud and then circle the answers they thought best answered the question. Next, the participants were told to turn their pretests over to begin the *Argumentation Evaluation Task*. Students were told to listen to the three sentences read aloud and circle the sentence they thought was the most effective argument. A total of eight groupings of sentences were used, four in the pretest and four in the posttest. Half of the participants received one set of the items at pretest while the other participants received the second set of four items. The items were then switched for each classroom in the posttest so each participant received all eight items. This was done to ensure that any effects were not due to the particular items that were used. The order of the three levels of argument quality (e.g., acceptable, unwarranted, or unsupported) were randomized. Finally, the participants were able to create their own persuasive arguments for the *Written Persuasive Argument Task*. Students were told they could write a persuasive argument in which they could persuade anyone (e.g., parents, sibling, teacher, or friend) to do anything (e.g., eat what they want for dinner, buy a new toy, clean room). Ideas for topics were written in the directions on the sheet and read aloud for students in case they were unclear of the directions or unable to think of a topic. Students were encouraged to write as much as they wanted to persuade someone to do something. All three measures were administered in one visit for each class and took participants approximately 20 minutes to complete.

Week 2: Instructional lesson. All students who were present in class during the second week of the study participated in this lesson. The lesson used a presentation-format (i.e., Prezi) on a SmartBoard to teach students about the purpose of advertising, the concept of target audience, and the tactics advertisers use to persuade a target audience. The topics were chosen based on current advertising literacy programs (Admongo, 2012; Austin & Johnson, 1997, Buijzen, 2007; Hobbs & Frost, 2003; Nelson, 2014) and components of advertising literacy assessed in the *Advertising Literacy Scale* (Rozendaal et al.,2016). Examples of print ads and commercials were shown to the class to cover these topics. For example, to look at how ads target different audiences, a print ad for a shampoo using a female celebrity was shown, followed by a discussion in which the class was asked to reflect on whom this ad may be targeting. The researcher called on multiple students to answer this question. Then, a commercial for Wisconsin Dells Waterparks© was shown, followed by a discussion of whom the advertisers might be targeting to buy their services. To examine tactics advertisers use to persuade their audiences, three commercials were chosen that focused on how products work, the use of celebrities, and

making people laugh (e.g., Billy Mays demonstrating how OxyClean works, Aaron Rodgers for All State Insurance, and an Evian water commercial with babies dancing). A print ad for Heinz Ketchup was used to ask the class what information was missing or misleading in the content.

After examining these examples of ads and covering the major concepts of advertising literacy, the class took part in a group activity that allowed them to engage in peer discussions as they explored the advertising literacy topics with print ads. The activity asked students to choose one of four print ads (i.e., Burger King, Sensodyne, Diet Coke, and Metro Shoes) and answer five questions as a group: (1) identify who the target audience was; (2) what the ad was trying to get them to think, feel, and buy; (3) the persuasive tactics the advertiser used to create the ad; (4) if they believed the ad was truthful; and (5) what information might be missing or misleading in the ad. The students worked together in their groups to answer the questions while the researcher circulated providing feedback to students. The intervention ended with a brief summary of the main ideas covered in the lesson.

Week 3: Posttests. The posttest measures took place in the third week and were identical to the pretest measures. The only exception was that four different items, similar in content and format, were presented for the *Argument Evaluation Task,* and participants were asked to pick a different scenario for the *Written Persuasive Argument Task*. Administration and timing of all measures were identical to the pretest.

RESULTS

The researchers conducted separate sets of analyses on the measures that assessed advertising literacy and those that assessed argumentation skills. The findings from each set are listed separately below.

Effect of Intervention on Ad Literacy

The first set of analyses examined pretest/posttest differences on the advertising literacy scale. Average scores for all items were submitted to mixed ANOVA with "Grade" (third, fourth) as the between-subjects variable and "Session" (pretest, posttest) and "Item Type" (Persuasive Intent, Selling Intent, skepticism, bias, and tactics) as the within-subjects variable. The analysis revealed an effect of "Session," $F(1,48)=47.16$, $p<.001$ with Tukey's post hoc tests showing that participants exhibited higher scores at posttest ($M=2.83$, $SD=.26$) than pretest ($M=2.58$, $SD=.29$), $p<.001$.

There was also an effect of "Item Type," $F(4,192)=77.59$, $p<.001$, which was mediated by a "Session by Item Type" interaction, $F(4,192)=3.69$, $p=.006$. Simple effects analyses revealed that there were two subsets of items for which students exhibited a significantly higher rate of responses at posttest compared to pretest: "Persuasive Intent" and "Selling Intent," both Fs>8.21, ps$<.001$.

Although there was neither an effect of nor interactions with "Grade," we followed-up "Session by Item" type interaction effects with separate analyses to be sure that the same patterns emerged for each grade. We conducted a series of *t*-test comparisons of pretest and posttest scores for each item type, using Holm's method to control for potential family-wise error. As suggested by Table 2, the analysis revealed that third graders showed the most consistent gains across item types – with significantly higher scores during posttest than pretest for the Persuasive Intent, Selling Intent, and Skepticism.

The Persuasive Intent item was the only item for which fourth graders exhibited a significantly higher response during posttest compared to pretest.

Table 2. *Comparison of Pretest and Posttest scores on each item from the Advertising literacy scale for fourth grade and third grade students*

	Fourth graders				**Third graders**			
Item type	Pretest	Posttest	*t*	*P*	Pretest	Posttest	*t*	*P*
Bias	2.96	3.00	0.44	0.66	2.75	2.94	1.46	0.16
Selling intent	3.02	3.31	1.22	0.19	2.77	3.38	4.10	<.001
Persuasive intent	3.13	3.59	5.57	<.001	3.16	3.48	3.72	<.01
Persuasive tactics	1.81	1.94	1.27	0.22	2.04	2.19	1.17	0.25
Skepticism	3.00	2.96	0.44	0.66	2.72	3.1	3.09	0.005

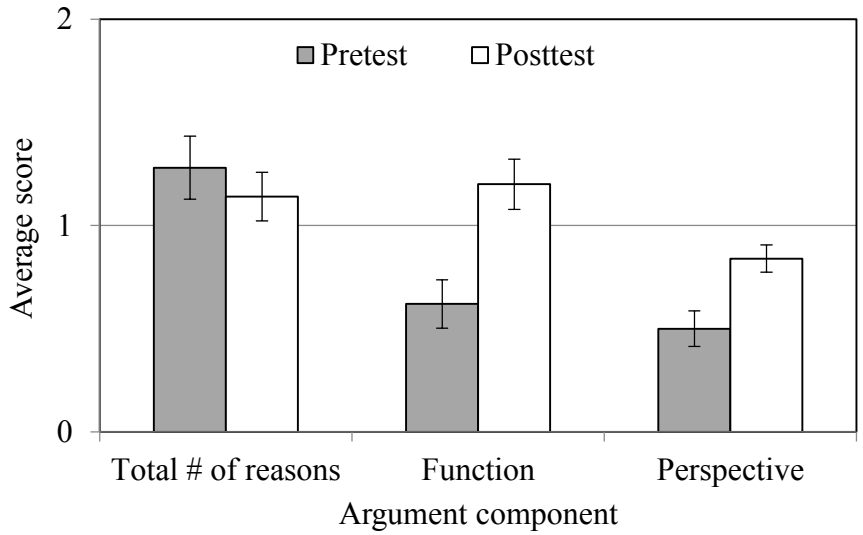
All *p*-values are two-tailed.

Overall, these results indicate that the intervention increased students' advertising literacy. The biggest effects were observed for cases in which students were required to assess the intent of advertisements. Moreover, the results suggest that while the intervention affected both groups of students, the effects were strongest for the younger group.

Effect of intervention on argument evaluation and argument generation

The next set of analyses assessed the effects of this intervention on argumentation by exploring pretest/posttest differences on the argument evaluation task and b students' responses in the argument generation task.

Argument evaluation. Average responses to each argument evaluation item were submitted to a mixed ANOVA with "Grade" (third, fourth) as the between-subjects variable and "Session" (pretest, posttest) as the between-subjects variable. The analysis revealed only an effect of grade, $F(1,48)=21.12$, $p<.001$, with Tukey's post hoc tests showing that fourth graders exhibited higher average scores ($M=1.95$, $SD=.12$) than third graders ($M=1.59$, $SD=.21$), $p<.001$. Because there was no effect of session, it would appear that the intervention did not influence students' evaluations of arguments. Further, inspection suggests that one reason for why this was the case is that responses were relatively high at pretest. All fourth graders and 83% of third graders (20 out of 24) selected the acceptable arguments for at least three of the four arguments during pretest.



Bars represent 1+/- standard error from the mean.

Figure 1. *Average score for each of the three argument components in the argument generation task*

Argument generation. Students' arguments were assessed according to the degree to which they fit into the three argument components (i.e., total number of reasons, function, and perspective; see Procedures for details on the coding schemes).

Average scores were submitted to a mixed ANOVA with "Grade" as a between-subjects variable and "Session" and "Argument" components as within-subjects variables. The analysis revealed main effects of "Argument" components, $F(2,47)=18.13$, $p<.001$, and "Session," $F(1,48)=5.52$, $p=.02$, as well as an interaction between these two variables, $F(2,47)=22.52$, $p<.001$. As suggested by Figure 1, students exhibited greater use of the "Functional" component, $F(1,48)=8.17$, $p<.001$, and "Perspective" component of arguments, $F(1,48)=7.21$, $p=.001$, at posttest compared to pretest. There were no effects of "Grade," and supplemental analyses revealed that the intervention effects for "Function" and "Perspective" components were evident for both groups of students.

Overall, these results support the conclusion that this intervention had an impact on students' argumentation skills. Although these students scored high on their overall abilities to detect quality arguments, this media

literacy intervention further facilitated students' abilities to generate their own arguments.

Discussion

The goal of this study was to examine the extent to which a short advertising literacy intervention would have an effect on the advertising knowledge and argumentation skills of third and fourth grade students. Overall, the findings from this study are in-line with previous research showing that advertising literacy programs are effective at increasing children's knowledge of advertising (Kunkel et al., 2004; Nelson, 2014). The novel finding from our study is that these effects were observed with only a minimal intervention and were present a full week after they were implemented. Thus, in combination with other recent evidence with even younger children than those studied in the present work (Stanley & Lawson, 2018), the results reported here suggest that short interventions can be effective at helping children acquire the skills necessary to be discerning consumers of media.

Perhaps, the most exciting finding from this work was the robust effect on children's argumentation. After this short intervention, aimed at teaching students about advertisements, participants showed improvements in their own abilities to write persuasive arguments. This is a noteworthy finding from a practical standpoint – it is a clear example of transfer, which is an appealing result given that educators must try to maximize student learning outcomes when choosing various instructional strategies.

From a theoretical perspective, these results are consistent with the Persuasion Knowledge Model (Friestad & Wright, 1994). The PKM notes that the persuasion knowledge an individual acquires will alter how they interpret future persuasive attempts, whether they are the target of the persuasive message or the one attempting to persuade others. One of the insights from this view is that a single exposure to a persuasive message is sufficient to change how individuals think about –and use – persuasion. Additionally, the PKM indicates that the knowledge an individual has on a specific topic adds to their ability to engage and evaluate persuasive attempts. The results clearly demonstrate that our instructional design was effective in this regard. This view also sheds light on the consistent patterns across the advertising literacy and argumentation measures. Increasing participants' knowledge about the intentions of advertisers and the tactics they tend to use boosted performance in a task in which success involved the effective use of persuasion to evaluate and build an argument.

This perspective might also help explain why this intervention had the strongest effect on younger students. The idea that persuasion knowledge is the product of an individual's exposure to persuasive claims might explain why this intervention lead to the most gains in advertising literacy score for third graders. Fourth graders are likely to have been exposed to more persuasive arguments and, therefore, are not as likely to gain as much from the lessons in this intervention. Indeed, this interpretation is consistent with the finding that fourth graders performed better than third graders in the argument evaluation task during pretest. Moreover, the PKM framework highlights the importance of early exposure; although children might naturally develop these media literacy skills by fourth grade, the present results provide compelling evidence that exposure to a lesson about the intentions of advertisers can strengthen media literacy skills, such as the ability to analyze, evaluate, and create persuasive messages.

CONCLUSIONS

Persuasion is a valued skill that can apply to many contexts. Instructional interventions that promote students' abilities to evaluate and create persuasive messages are essential in the field of education. One way children can develop persuasion-related skills is through practice. The amount of practice, both in and out of the classroom, in which an individual has engagedwith interpreting and producing persuasive arguments plays a key role in their development of persuasion knowledge (Friestad & Wright, 1994; Reznitskaya & Anderson, 2002).

This work explored the viability of using a media-based intervention to help teach young students to develop the skills to effectively evaluate, interpret, and generate persuasive arguments. It showed that a short intervention, in which students learned about the tactics used by advertisers, lead to near and far transfer. After a one-week delay, students demonstrated proximal gains in their advertising knowledge. The more distal gains appeared in students' argumentation. This intervention strengthened students' capacities to generate persuasive arguments. In short, this lesson had a positive effect on a central component of critical thinking.

Although this study has many valuable findings, there are some limitations. For instance, the single lesson might have proven more effective than more lessons to strength the effectiveness of the concepts.

Additionally, the posttest was administered only one week after the lesson. It might have been useful to do a later follow-up to show if the effects lasted past one week or showed any improvements. Another limitation is that because the persuasion tactics items were not reliable measures of that construct, we do not know how this sort of intervention might impact that aspect of persuasion knowledge.

Future research could focus on different aspects of advertising, such as the persuasive tactics that are often used by advertisers. Indeed, there are many new advertising techniques that are found outside of commercials. There is value in focusing research on lessons regarding techniques to which children may be more likely exposed, such as advergames, implicit advertisements (e.g., social media endorsements), and online ads.

These findings have important implications for education in that if one short media literacy lesson has a profound impact on children's abilities to effectively use persuasion to engage in critical thinking, then we might expect that implementing a longer or more focused lesson on advertising may result in significant increases in other critical thinking measures, such as analyzing and evaluating argumentative messages in the media. At the very least, this study demonstrates that there is considerable educational value in dedicating instructional time toward media literacy.

REFERENCES

An, S., Jin, H. S., & Park, E. H. (2014). Children's advertising literacy for advergames: perception of the game as advertising. *Journal of Advertising, 43*(1), 63-72. https://doi.org/10.1080/00913367.2013.795123

Bartsch, K., & London, K. (2000). Children's use of belief information in selecting persuasive arguments. *Developmental Psychology, 36*(3), 352-65. https:// doi.org/10.1037//0012-1649.36.3.352

Belova, N., & Eilks, I. (2016). German Teachers' Views on PromotingScientific Media Literacy Using Advertising in the Science Classroom. *International Journal of Science and Mathematics Education, 14*(7), 1233-1254. https://doi.org/10.1007/s10763-015-9650-5

Britt, M. A., & Kurby, C. A. (2005, July, 6-9). Detecting incoherent informal arguments [Conference session]. Paper presented at the *15th Annual Meeting of the Society for Text and Discourse*, Chicago, IL.

Britt, M. A., & Larson, A. A. (2003). Constructing representations of arguments. *Journal of Memory and Language, 48*(4), 794-810. https://doi.org/10.1016/S0749-596X(03)00002-0

Brucks, M., Armstrong, G. M., & Goldberg, M. E. (1988). Children's use of cognitive defenses against television advertising: A cognitive response approach. *Journal of Consumer Research, 14*(4), 471-482. https://doi.org/10.1086/209129

Buijzen, M. (2007). Reducing children's susceptibility to commercials: Mechanisms of factual and evaluative advertising interventions. *Media Psychology, 9*(2), 411-430. https://doi.org/10.1080/15213260701291361

Buijzen, M., Van Reijmersdal, E. A., & Owen, L. H. (2010). Introducing the PCMC model: An investigative framework for young people's processing of commercial media content. *Communication Theory, 20*(4), 427-450. https://doi.org/10.1111/j.1468-2885.2010.01370.x

Casey, G. (2013). Interdisciplinary Literacy through Social Media in the Mathematics Classroom: An Action Research Study. *Journal of Adolescent & Adult Literacy, 57*(1), 60-71. https://doi.org/10.1002/jaal.216

Christenson, P. G. (1982). Children's perceptions of TV commercials and products: The effects of PSAs. *Communication Research, 9*(4), 491-524. https://doi.org/10.1177/009365082009004001

Clark, R., & Delia, J. (1976). The development of functional persuasive skills in childhood and early adolescence. *Child Development, 47*(4), 1008-1014. https://doi.org/10.2307/1128437

Council of Chief State School Officers, & National Governors Association. (2011). *Common Core State Standards for English language arts and literacy in history/social studies, science, and technical subjects*. http://www.corestandards.org/ela-literacy

Crowell, A., & Kuhn, D. (2014). Developing dialogic argumentation skills: A 3-year intervention study. *Journal of Cognition and Development, 15*(2), 363-381. https://doi.org/10.1080/15248372.2012.725187

Felton, M. (2004). The development of discourse strategies in adolescent argumentation. *Cognitive Development, 19*(1), 35-52. https://doi.org/10.1016/j.cogdev.2003.09.001

Felton, M., & Kuhn, D. (2001). The development of argumentative discourse skill. *Discourse Processes, 32*(2 & 3), 135-153. https://doi.org/10.1080/0163853X.2001.9651595

Filippova, E., & Astington, J. W. (2008). Further development in social reasoning revealed in discourse irony understanding. *Child Development*, *79*(1), 126-138. https://doi.org/10.1111/j.1467-8624.2007.01115.x

Freeman, D., & Shapiro, S. (2014). Tweens' knowledge of marketing tactics: Skeptical beyond their years. *Journal of Advertising Research, 54*(1), 44-55. https://doi.org/10.2501/JAR-54-1-044-055

Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *Journal of Consumer Research, 21*(1), 1-31. https://doi.org/10.1086/209380

Gunter, B., Oates, C., & Blades, M. (2005). *Advertising to children on TV: Content, impact, and regulation.* Lawrence Erlbaum Associates.

Heyman, G. D., & Legare, C. H. (2005). Children's evaluation of sources of information about traits. *Developmental Psychology, 41*(4), 636-647. https://doi.org/10.1037/0012-1649.41.4.636

John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research, 26*(3), 183-213. https://doi.org/ 10.1086/209559

Knudson, R. E. (1991). Effects of instructional strategies, grade and sex on student's persuasive writing. *Journal of Experimental Education, 59*(2), 141-152. https://doi.org/10.1080/00220973.1991.10806557

Kuhn, D. (1991). *The skills of argument.* Cambridge UP.

Kuhn, D., & Crowell, A. (2011). Dialogic argumentation as a vehicle for developing young adolescents' thinking. *Psychological Science, 22*(5), 545-552. https://doi.org/10.1177/0956797611402512

Kuhn, D., Hemberger, L., & Khait, V. (2016). Tracing the Development of Argumentative Writing in a Discourse-Rich Context. *Written Communication, 33*(1) 92-121. https://doi.org/10.1177/0741088315617157

Kuhn, D., Shaw, V., & Felton, M. (1997). Effects of dyadic interaction on argumentative reasoning. *Cognition and Instruction, 15*(3), 287-315. https://doi.org/10.1207/s1532690xci1503_1

Kuhn, D., & Udell, W. (2007). Coordinating own and other perspectives in argument. *Thinking & Reasoning, 13*(2), 90-104. https://doi.org/10.1080/13546780600625447

Kuhn, D., & Udell, W. (2003). The development of argument skills. *Child Development, 74*(5), 1245-1260. https://doi.org/10.1111/1467-8624.00605

Kunkel, D., Wilcox, B. L., Cantor, J., Palmer, E., Linn, S., & Dowrick, P. (2004). *Report of the APA Task Force on Advertising and Children.* American Psychological Association. https://www.apa.org/pi/families/resources/advertising-children.pdf

Larrain, A. (2017). Group-work discussions and content knowledge gains: Argumentative inner speech as the missing link? *Learning, Culture and Social Interaction, 14*(1), 1-12. https://doi.org/10.1016/j.lcsi.2017.04.002

Larson, M., Britt, M. A., & Kurby, C. A. (2009). Improving students' evaluation of informal arguments. *Journal of Exceptional Education, 77*(4), 339-360. https://doi.org/10.3200/JEXE.77.4.339-366

Larson, M., Britt, M. A., & Larson, A. A. (2004). Disfluencies in comprehending argumentative texts. *Reading Psychology, 25*(3), 205-224. https://doi.org/10.1080/02702710490489908

Livingstone, S., & Helsper, E. J. (2006). Does advertising literacy mediate the effects of advertising on children? A critical examination of two linked research literatures in relation to obesity and food choice. *Journal of Communication, 56*(3)*,* 560-584. https://doi.org/10.1111/j.1460-2466.2006.00301.x

Macklin, M. C. (1983). Do children understand TV ads? *Journal of Advertising Research, 23*(1), 63-70. https://psycnet.apa.org/record/1983-23183-001

McAlister, A. R., & Cornwell, T. B. (2009). Preschool children's persuasion knowledge: The contribution of theory of mind. *Journal of Public Policy & Marketing*, *28*(2), 175-185. https://doi.org/10.1509/jppm.28.2.175

McCann, T. M. (1989). Student argumentative writing: knowledge and ability at three grade levels. *Research in the Teaching of English, 23*(1)*,* 62-76. https://www.jstor.org/stable/40171288

Mercier, H. (2011). Reasoning serves argumentation in children. *Cognitive Development, 26*(3)*,* 177-191. https://doi.org/10.1016/j.cogdev.2010.12.001

Mills, C. M., & Elashi, F. B. (2014). Children's skepticism: Developmental and individual differences in children's ability to detect and explain distorted claims. *Journal of Experimental Child Psychology, 124*, 1-17. https://doi.org/10.1016/j.jecp.2014.01.015

Mills, C. M., & Keil, F. C. (2005). The development of cynicism. *Psychology Science, 16*(5), 385-390. https://doi.org/ 10.1111/j.0956-7976.2005.01545.x

Morrell, E. (2012). 21st‐Century Literacies, Critical Media Pedagogies, and Language Arts. *Reading Teacher, 66*(4), 300-302. https://doi.org/10.1002/TRTR.01125

Moses, L. J., & Baldwin, D. A. (2005). What can the study of cognitive development reveal about children's ability to appreciate and cope with advertising? *Journal of Public Policy & Marketing, 24*(2), 186-201. https://doi.org/10.1509/jppm.2005.24.2.186

Moshman, D. (2011). Evolution and development of reasoning and argumentation: Commentary on Mercier. *Cognitive Development, 27*(3), 192-195. https://doi.org/10.1016/j.cogdev.2011.03.002

National Center for Education Statistics. (2008). *The nation's report card: Writing 2007.* https://nces.ed.gov/nationsreportcard/pdf/main2007/2008468.pdf

Nelson, M. R. (2014). Developing persuasion knowledge by teaching advertising literacy in primary school. *Journal of Advertising, 45*(2), 1-14. https://doi.org/10.1080/00913367.2015.1107871

Oates, C., Blades, M., & Gunter, B. (2002). Children and television advertising: When do they understand persuasive intent? *Journal of Consumer Behavior, 1*(3), 238–245. https://doi.org/10.1002/cb.69

Obermiller, C., & Spangenberg, E. R. (1998). Development of a scale to measure consumer skepticism toward advertising. *Journal of Consulting & Clinical Psychology, 7*(2), 159-86. https://doi.org/10.1207/s15327663jcp0702_03

Osborne, J., Simon, S., & Erduran, S. (2004). Enhancing the quality of argumentation in school science. *Journal of Research in Science Teaching, 41*(10), 994-1020. https://doi.org/10.1002/tea.20035

Papathomas, L., & Kuhn, D. (2017). Learning to argue via apprenticeship. *Journal of Experimental Child Psychology, 159*, 129-139. https://doi.org/10.1016/j.jecp.2017.01.013

Reznitskaya, A., & Anderson, R. C. (2002). The argument schema and learning to reason. In C. C. Block & M. Pressley (Eds.), *Comprehension instruction* (pp. 319-334). Guilford.

Reznitskaya, A., Anderson, R. C., & Kuo, L. (2007). Teaching and Learning Argumentation. *The Elementary School Journal, 107*(5), 449-472. https://doi.org/10.1086/518623

Robertson, T. S., & Rossiter, J. R. (1974). Children and commercial persuasion: An attribution theory analysis. *Journal of Consumer Research, 1*(1), 13-20. https://doi.org/10.1086/208577

Rozendaal, E., Buijzen, M., & Valkenburg, P. M. (2009). Do children's cognitive defenses reduce their desire for advertised products? *Communications: The European Journal of Communication Research, 34*(3), 287-303. https://doi.org/10.1515/COMM.2009.018

Rozendaal, E., Buijzen, M., & Valkenburg, P. (2011). Children's understanding of advertisers' persuasive tactics. *International Journal of Advertising*, *30*(2), 329-350. https://doi.org/10.2501/IJA-30-2-329-350

Rozendaal, E., Lapierre, M. A., Van Reijmersdal, E. A., & Buijzen, M. (2011). Reconsidering advertising literacy as a defense against advertising effects. *Media Psychology*, *14*(4), 333–354. https://doi.org/10.1080/15213269.2011.620540

Rozendaal, E., Opree, S. J., & Buijzen, M. (2016). Development and validation of a survey instrument to measure children's advertising literacy. *Media Psychology, 19*(1), 72-100. https://doi.org/10.1080/15213269.2014.885843

Selman, R. L. (1980). The growth of interpersonal understanding. Academic Press.

Stanley, S., & Lawson, C. A. (2018). Developing discerning consumers: An intervention that increases skepticism toward advertisements in a sample of 4- to 5-year olds in the US. *Journal of Children and Media, 12*(2)*,* 211-225. https://doi.org/10.1080/17482798.2017.1418757

Stein, N. L., & Albro, E. R. (2001). The origins and nature of arguments: Studies In conflict understanding, emotion, and negotiation. *Discourse Processes, 32*(2-3)*,* 113-133. https://doi.org/10.1207/S15326950DP3202&3_02

Stein, N. L., Bernas, R. S., & Calicchia, D. J. (1997). Conflict talk: Understanding and resolving arguments. In T. Givon (Ed.), *Conversation: Cognitive, communicative and social perspectives: Typological studies in language* (Vol. 34, pp. 233–267). John Benjamins.

Stein, N. L., & Miller, C. A. (1990). I win–you lose: the development of argumentative thinking. In J. Voss, D. Perkins, & J. Segal (Eds.), *Informal reasoning and education* (pp. 265-290). Lawrence Erlbaum Associates.

Stutts, M. A., Vance, D., & Hudleson, S. (1981). Program-commercial separators In children's television: Do they help a child tell the difference

between Bugs Bunny and the Quick Rabbit? *Journal of Advertising, 10*(2), 16-25. https://doi.org/10.1080/00913367.1981.10672757

Toulmin, S. E. (1958). *The uses of argument*. Cambridge UP.

Walton, D. N. (1989). Dialogue theory for critical thinking. *Argumentation, 3*(2)*,* 169-184. https://doi.org/ 10.1007/BF00128147

Ward, S., Reale, G., & Levinson, D. (1972). Children's perceptions, explanations and judgments of television advertising: A further exploration. In E. A. Rubinstein, G. A. Comstock, and J. P. Murray (Eds.), *Television and Social Behavior*: *Television in Day-to-Day Life: Patterns of Use* (Vol. 4, pp. 468-490). US Government Printing Office.

Wellman, D. (1990). *The child's theory of mind.* Bradford Books/MIT Press.

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, *13*(1), 103-128. https://doi.org/10.1016/0010-0277(83)90004-5

Wright, P., Friestad, M., & Boush, D. M. (2005). The development of marketplace persuasion knowledge in children, adolescents, and young adults. *Journal of Public Policy & Marketing, 24*(2), 222-233. https://doi.org/10.1509/jppm.2005.24.2.222

Young, B. M. (1990). *Television Advertising and Children.* Clarendon Press.

Zelazo, P. D., Muller, U., Frye, D., & Marcovitch, S. (2003). The development of executive function in early childhood. *Monographs of the Society for Research in Child Development, 68*(3), vii-137. https://doi.org/10.1111/j.0037-976x.2003.00260.x

Zohar, A., & Nemet, F. (2002). Fostering students' knowledge and argumentation skills through dilemmas in human genetics. *Journal of Research in Science Teaching, 39*(1), 35-62. https://doi.org/10.1002/tea.10008