



Effectiveness of a School-Based Intervention to Empower Children to Cope With Advertising

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Abstract: This study tested the effectiveness of a theory-driven, school-based advertising intervention entitled Ad Masters that aimed to stimulate children's advertising coping behavior in the current media landscape. A cluster randomized controlled trial was completed among 704 children (7–12 years old) in schools. The schools were allocated to either the intervention group ($n = 399$) or control group ($n = 305$). Both short-term (directly after the intervention) and long-term effects (3 months after the end of the intervention) were measured. Bayesian mixed-effect analyses showed positive short- and long-term effects of the intervention on children's understanding of advertising's tactics. Structural equation analysis showed that the intervention-induced changes in children's understanding of advertising's tactics were not related to any changes in their use of advertising coping strategies or their advertising susceptibility. No other intervention effects were found. However, structural equation analyses showed that, regardless of the intervention, motivation and ability to use advertising coping strategies are both associated with children's actual coping behavior. These findings indicate that motivation and ability to effectively use advertising coping strategies are important empowering factors that should be taken into account in future research on children's advertising coping behavior and in advertising intervention development.

Keywords: advertising, children, intervention, advertising literacy, coping strategies

Today's children are facing a media environment increasingly saturated with advertising. Research has demonstrated that this increased commercialization of the media environment stimulates children's desire of advertised products, which can have undesirable consequences for their well-being (e.g., materialism, parent-child conflict, unhealthy food preferences; e.g., Buijzen & Valkenburg, 2003). Additionally, issues of fairness have been raised, because children's advertising-related knowledge is still underdeveloped (Kunkel et al., 2004). Having knowledge of advertising is considered to be a necessary precondition for children to cope with advertising, because it is only when they are able to recognize a message as a form of advertising that they will have the opportunity to enact certain coping strategies. These issues of fairness are even more severe in the contemporary media environment, which is characterized by subtle advertising formats that are integrated in entertainment. Children have great difficulty recognizing the commercial nature of these practices (De Jans, Van de Sompel, Hudders, & Cauberghe, 2019).

As a result of these concerns, there is an increasing call for the development of educational interventions to empower children as consumers (Nelson, 2016). Over the past few years, a number of intervention programs have

been implemented (e.g., <http://www.mediasmart.uk.com>; <http://www.admongo.org>). These programs focus primarily on increasing children's advertising knowledge, also referred to as *advertising literacy* (Hudders et al., 2017; Rozendaal, Lapierre, Van Reijmersdal, & Buijzen, 2011). Although such interventions indeed are effective in increasing advertising literacy (e.g., Jeong, Cho, & Hwang, 2012; Nelson, 2016), research indicates that this does not automatically enable children to cope with advertising (Livingstone & Helsper, 2006; Nairn & Fine, 2008; Rozendaal et al., 2011). To cope with advertising successfully, children need to engage in advertising coping strategies (e.g., avoidance, formulate critical thoughts). However, insights regarding children's advertising processing (Buijzen, Van Reijmersdal, & Owen, 2010) and cognitive development (Brucks, Armstrong, & Goldberg, 1988; Moses & Baldwin, 2005) suggest that, due to the powerful emotional appeal of advertising, combined with children's immature cognitive abilities, children will not be motivated or able to use their coping strategies. To stimulate children's advertising coping skills, interventions should therefore not only increase their advertising literacy (i.e., awareness and understanding of advertising), but also provide them with the motivation and ability to effectively enact their coping

strategies. Thus far, no advertising interventions exist that focus on all three components (i.e., advertising literacy, motivation, and ability).

The current study addresses this gap by testing the effectiveness of a new theory-driven, school-based intervention entitled Ad Masters. The proposed intervention is fundamentally different from existing advertising interventions in that it is designed to not only increase children's advertising literacy, but also to actually change the way they respond to advertising by increasing their motivation and ability to cope with advertising. To this end, the intervention uses an unconventional combination of theory-based behavior change techniques (self-persuasion, emotion labeling, and implementation intentions) from the field of persuasive communication and social and developmental psychology. The intervention targets children in Grades 3–5 in elementary school (approximately 8–11 years of age), because children in this age range still have major difficulty enacting advertising coping strategies, but already possess the sociocognitive skills that are necessary to participate in the proposed intervention program (Moses & Baldwin, 2005).

Theoretical Framework

Motivation to Cope With Advertising

A common technique used in persuasion research to motivate people to change their behavior is by providing arguments of why it is important to change. However, when faced with counter-attitudinal arguments, most people will not comply (Aronson, 1999). Therefore, it is expected that providing children with arguments of why it is important to critically cope with advertising (to which they generally hold positive attitudes; e.g., Rozendaal, Slot, Van Reijmersdal, & Buijzen, 2013) will not motivate them to activate coping strategies.

Self-persuasion may overcome this problem (Aronson, 1999). Self-persuasion stems from Festinger's cognitive dissonance theory (Festinger, 1957), which states that dissonance (an unpleasant feeling) is aroused when individuals notice inconsistency between their attitudes and their behavior. To reduce dissonance, people try to restore balance by changing their attitudes or behavior. Self-persuasion uses this principle by asking people to argue in favor of a desired behavior ("Write down two arguments that stress why it's important to be critical about advertising"). Once a relevant situation occurs (when confronted with advertising), people have the tendency to rely on these self-generated arguments in order to avoid dissonance.

Self-persuasion is a powerful technique because it increases people's intrinsic motivation to change

(Mussweiler & Neumann, 2000). It has been shown to be effective in a wide variety of contexts (e.g., condom use, smoking behavior, alcohol use; Banerjee & Greene, 2007; Briñol, McCaslin, & Petty, 2012; Müller et al., 2009), yet has not been applied in the context of advertising or with children. Children as young as 4 can already experience dissonance (Egan, Santos, & Bloom, 2007). Therefore, self-persuasion may be an effective intervention technique to increase children's motivation to enact advertising coping strategies.

Ability to Cope With Advertising

Children's ability to cope with advertising depends largely on their cognitive skills (Moses & Baldwin, 2005). To cope with advertising, children need to have the cognitive control to stop their initial emotional responses to the advertising message and instead react alternatively (i.e., enact coping strategies). This process is also referred to as the *stop-and-think response* (Rozendaal et al., 2011), since it requires that children control their emotional responses to the advertisement (i.e., stop) and then enact a strategy to help cope with advertising (i.e., think).

The *stop* part of the stop-and-think response is closely linked to children's emotion regulation skills (Rozendaal et al., 2011). Emotion regulation refers to the processes that aid in the experience, monitoring, and control of emotions (Gross, 1998), and does not reach adult levels until late adolescence (Diamond, 2002). Emotion regulation is expected to play an important role in children's ability to stop and think about advertisements, particularly because so much of the content in contemporary advertisements is centered on emotional cues. Children with less of an ability to control affect via emotion regulation will be overwhelmed by the emotional cues in advertising and, therefore, less able to enact their advertising coping strategies. Prior research has shown that children with lower emotion regulation skills are indeed more susceptible to advertising (Lapierre, 2013).

Although emotion regulation skills naturally develop when children mature, research has shown that these skills are trainable and can be improved at any age (e.g., Greenberg, Kusche, Cook, & Quamma, 1995; Izard et al., 2008). Social-emotional development programs (e.g., PATHS; Greenberg et al., 1995; Head Start, Izard et al., 2008; mindfulness, van de Weijer-Bergsma, Langenberg, Brandsma, Oort, & Bögels, 2014) offer useful techniques in this respect. In these programs, children learn to become aware of and express their emotions. The premise behind this is that increasing children's ability to understand and label their feeling states or emotion experiences will increase their conscious control of them (Izard et al., 2008, Greenberg et al., 1995). Thus, the labeling of

emotions may be an effective intervention technique to increase children's ability to cope with advertising, because it increases their emotion regulation which can facilitate the "stop" part of the stop-and-think response.

Once children are able to control their emotional responses toward an appealing advertisement, they also need to be able to enact a script or strategy to cope with the advertisement (i.e., the *think* part of stop and think). This ability is closely linked to children's information-processing abilities. Successful coping with advertising requires children to process the advertising message and, at the same time, activate and apply an effective coping strategy. Because children's cognitive abilities are still maturing, they are unlikely to engage in such a high level of information processing. Instead, they are more likely to rely on simple cues or shortcuts, using low-effort mechanisms to respond to an advertising message (Buijzen et al., 2010; Rozendaal et al., 2011).

A technique that could increase children's ability to actually enact their advertising coping strategies under conditions of low information processing is implementation intentions. Implementation intentions are simple if-then plans that specify when and how one's goal will be put into practice (i.e., "If situation X occurs, then I will respond in this way"; Gollwitzer, 1999). With practice, this process can become a mental routine and subsequently lead to behavior change in relatively automatic ways, while using few cognitive resources. The efficacy of this behavior change technique has been demonstrated convincingly in various domains (e.g., Gollwitzer & Sheeran, 2006; Hagger & Luszczynska, 2014), yet has only recently been related to the goal of coping with advertising (Hudders et al., 2017).

Implementation intentions may be a powerful intervention technique for increasing children's ability to cope with advertising, as it can help them to actually enact a coping strategy (the *think* part of stop and think) by relying on simple and low-demand if-then rules.

Hypotheses

The Ad Masters intervention aims to increase the advertising literacy (i.e., knowledge), motivation, and ability that children need to effectively cope with advertising by combining advertising literacy education methods with behavior-change techniques (i.e., self-persuasion, emotion labeling, and implementation intentions). It is expected that combining these techniques will yield a synergy effect, such that:

Hypothesis 1 (H1): Children in the intervention condition (as compared with controls) (a) have a higher level of advertising literacy, (b) have a higher motivation to engage in advertising coping strategies, (c) have a higher ability to engage in advertising

coping strategies, (d) are more likely to actually use advertising coping strategies, and (e) are less susceptible to advertising's effects (i.e., advertised product desire and advertised product choice).

Furthermore, based on insights from the persuasion and resistance literature (e.g., Knowles & Linn, 2004), the following mediation effects are hypothesized:

Hypothesis 2 (H2): Children in the intervention condition (as compared with controls) have a higher motivation to engage in advertising coping strategies, which leads to an increase in their actual use of such strategies, which in turn diminishes their susceptibility to advertising's effects.

Hypothesis 3 (H3): Children in the intervention condition (as compared with controls) have a higher ability to engage in advertising coping strategies, which leads to an increase in their actual use of such strategies, which in turn diminishes their susceptibility to advertising's effects.

On the basis of earlier research on the relation between children's advertising literacy and advertising susceptibility (see Rozendaal et al., 2011), we did not have any strong theoretical reason to expect that intervention-induced increases in advertising literacy (i.e., understanding intent and tactics) lead to any changes in their use of advertising coping strategies and advertising susceptibility.

Method and Research Plan

Study Design

A two-arm parallel cluster randomized controlled trial was conducted among 7- to 12-year-old children of primary schools (Grades 3-6). Randomization occurred at the school level to avoid contamination between conditions. Schools were allocated to one of the two conditions: (1) the Ad Masters intervention or (2) the wait-list control condition. Children in the control condition followed the regular school curriculum and participated in the Ad Masters intervention after the posttest measurement. Children in both conditions completed questionnaires including pre- and posttest measurements during school hours before (baseline) and immediately after the intervention (6 weeks after baseline). To measure long-term effects in the intervention condition, follow-up took place 3 months after the end of the intervention. The authors have preregistered this research with an analysis plan at the *Journal of Media Psychology*.

Table 1. Means and standard deviations of the main variables

	Pretest (Time 1)		Posttest (Time 2)		Follow-up (Time 3)	
	Intervention	Control	Intervention	Control	Intervention	Control
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Understanding selling intent	3.06 (0.74)	2.96 (0.78)	3.25 (0.64)	3.10 (0.72)	3.38 (0.63)	3.34 (0.64)
Understanding persuasive intent	3.02 (0.75)	2.91 (0.78)	3.27 (0.71)	3.09 (0.75)	3.42 (0.65)	3.40 (0.68)
Understanding persuasive tactics	2.89 (0.68)	2.81 (0.69)	3.20 (0.64)	2.97 (0.66)	3.31 (0.64)	3.31 (0.60)
Advertising skepticism	3.28 (0.68)	3.17 (0.76)	3.43 (0.58)	3.30 (0.70)	3.45 (0.64)	3.42 (0.65)
Advertising disliking	2.57 (0.75)	2.68 (0.76)	2.36 (0.61)	2.37 (0.70)	2.27 (0.67)	2.30 (0.65)
Motivation to use coping strategies	0.74 (1.06)	0.70 (1.06)	1.03 (1.08)	1.13 (1.11)	1.22 (1.17)	1.41 (1.14)
Ability to use coping strategies	3.05 (0.65)	3.02 (0.76)	3.24 (0.58)	3.19 (0.62)	3.30 (0.60)	3.29 (0.63)
Use of coping strategies	2.84 (0.88)	3.00 (0.65)	2.96 (0.89)	2.99 (0.93)	2.99 (0.96)	3.03 (0.97)
Advertised product desire	2.88 (0.68)	2.88 (0.65)	2.87 (0.59)	2.85 (0.63)	2.87 (0.63)	2.85 (0.65)
Advertised product choice	1.85 (0.99)	1.93 (0.92)	1.85 (0.93)	1.81 (0.90)	1.79 (0.93)	1.84 (0.93)

Participants

The study was conducted in 15 schools in different urban and suburban regions of The Netherlands. Schools were recruited via the network of the Nationale Academie voor Media en Maatschappij (<https://www.mediaenmaatschappij.nl>), a well-known Dutch national media literacy organization. The inclusion criterion was that the children had not participated in any advertising-related intervention before. The final sample for the analysis included 704 children (48% girls) between 7 and 12 years old ($M = 9.22 \pm SD = 0.92$), with 399 (57%) in the intervention and 305 (43%) in the control group. The sample size of this study was pre-specified based on an a priori power analysis computed in G*Power (Faul, Erdfelder, Lang, & Buchner, 2007; see Electronic Supplementary Material, ESM 1). Informed consent was obtained from schools and parents, and informed assent was obtained from the children. The intervention procedure received approval by the Ethics Committee of the Faculty of Social Sciences at Radboud University, The Netherlands (ECSW2016-1403-382).

Intervention

The Ad Masters intervention consisted of six 60-min sessions. The first three sessions aimed to increase advertising literacy based on educational techniques that are derived from the media and advertising literacy education literature (e.g., Nelson, 2016) and existing advertising interventions (e.g., Media Smart). Children learned how to recognize different forms of advertising and were taught about advertising's intent, source, and tactics. The fourth session aimed to increase children's ability to cope with advertising, specifically the *stop* part of the stop-and-think response. By using the emotion labeling technique, children learned to become aware of and control their initial emotional responses

toward appealing advertisements. The fifth session also aimed to increase children's ability to cope with advertising, now focusing on the *think* part of the stop-and-think response. By using implementation intentions, they learned to actually enact their preferred advertising coping strategy. The final session aimed to stimulate children's motivation to engage in advertising coping strategies by using the self-persuasion technique. See ESM 2 for a more detailed overview of the Ad Masters intervention.

Measures

Means and standard deviations of all measures for the intervention and control group at the three measurement time points are presented in Table 1. The questionnaire consisted of 57 items, which are listed in ESM 3. Cronbach's α values of all measures for all three measurement time point (pretest, posttest, and follow-up posttest) are presented in ESM 4.

Susceptibility to Advertising Effects

Children's susceptibility to advertising effects was measured as (a) children's advertised product desire and (b) advertised product choice. In order to measure these advertising effects, children were first individually exposed to three different types of advertising (i.e., a commercial, an "unboxing" video on YouTube, and a brand placement in a vlog on YouTube). The advertisements showed brands that are popular among children. Two noncommercial media messages (i.e., a fragment from a TV show, a fragment from a YouTube vlog without brand placements) were included as fillers. The commercial and noncommercial media messages were shown in randomized order. After being exposed to all the media messages, the children were asked to make a shopping list in order to test their

(hypothetical) product choice. They were shown a list of 20 food products (i.e., the three products that were promoted in the advertisements and 17 filler products). For each product they were asked whether they wanted to put it on their shopping list. The variable advertised product choice was constructed by summing the number of promoted products that were included on the shopping list. Since there were three advertised products, scores could range between 0 and 3. A higher score indicated more advertised products on the shopping list.

After the product choice task, the children were asked to indicate how much they liked and how much they wanted to have eight different products (i.e., the three products that were promoted in the advertisements and five filler products; Rozendaal et al., 2013; Van Reijmersdal, Rozendaal, & Buijzen, 2012). To construct the variable advertised product desire, the items asking for children's liking and desire for the three products that were promoted in the advertisements were averaged. Scores could range between 1 (= *not at all*) and 4 (= *very much*).

Use of Advertising Coping Strategies

To measure children's use of advertising coping strategies, a scale was developed based on earlier work on advertising coping strategies (Fransen, Smit, & Verlegh, 2015; Rozendaal, Oprea, & Buijzen, 2016). Four different advertising coping strategies were distinguished: cognitive avoidance (CA), mechanical avoidance (MA), negative affect (NA), and disbelief (DB). Children were asked how often they had used these strategies in the previous week. A total score for the use of advertising coping strategies was constructed by calculating an average across the four different strategies. Scores could range between 1 (= *never*) and 5 (= *almost always*).

Motivation to Use Advertising Coping Strategies

The measure for children's motivation to use advertising coping strategies was based on the Self-Regulation Questionnaire (SRQ; Ryan & Connell, 1989), which assesses individual differences in the types of motivation (i.e., extrinsic vs. intrinsic) to perform a certain behavior. The children were asked why they engage in each of the four different advertising coping strategies, thereby making a distinction between extrinsic motivation (EM) and intrinsic motivation (IM). The motivation to use advertising coping strategies scale was created by subtracting the extrinsic motivation subscale from the intrinsic motivation subscale (Ryan & Connell, 1989). Thus, a total score for children's motivation to use advertising coping strategies was created by subtracting the average score for children's extrinsic motivation to use the four advertising coping strategies from the average score for children's intrinsic motivation to use the four coping strategies. Scores could range between -3 and 3 . A higher

positive score means a higher intrinsic motivation and a higher negative score means a higher extrinsic motivation.

Ability to Use Advertising Coping Strategies

Children's ability to use advertising coping strategies was measured by asking children to indicate the extent to which they believe in their own ability to use the different coping strategies outlined earlier (i.e., perceived self-efficacy; Bandura, 1997). A total score for children's ability to use advertising coping strategy was constructed by calculating an average across the four items. Scores could range between 1 (= *no, I'm certainly not able to do so*) and 4 (= *yes, I'm certainly able to do so*).

Advertising Literacy

To measure children's advertising literacy, several subscales of the advertising literacy scale for children (ALS-c; Rozendaal, Oprea, & Buijzen, 2016) were used. Three components of conceptual advertising literacy were measured: understanding of selling intent (e.g., "Is the purpose of advertising to make you buy the advertised products?"), understanding of persuasive intent (e.g., "Is the purpose of advertising to make you feel good about the advertised products?"), and understanding of persuasive tactics (e.g., "Do you think advertisers try to get your attention by making ads funny?"). Scores could range between 1 (= *no, certainly not*) and 4 (= *yes, for sure*). A higher score indicates a better understanding of advertising. Additionally, children's evaluative or attitudinal advertising literacy was assessed by measuring their advertising skepticism (e.g., "How often do you think advertising is truthful?") and their general critical attitude toward advertising (e.g., "How often do you think advertising is irritating?"). Scores can range between 1 (= *almost always*) and 5 (= *never*). A higher score indicates a higher level of attitudinal advertising literacy (and thus a more critical attitude toward advertising).

Background Variables

Several background variables were assessed, including children's age, gender, and prior brand use. Prior brand use was measured by asking children to indicate how often they eat or drink the advertised products. Scores can range between 1 (= *never*) and 5 (= *very often*).

Results

Preparatory Analyses

Prior to analyses, we checked for outliers by means of the three-sigma rule; no participants were excluded from data

analysis. Additionally, a randomization check was conducted by means of independent-samples *t* test and Pearson's chi-square test to assess whether the randomization resulted in a balanced distribution across the intervention and control group. The analyses for the variables at pre-intervention demonstrated that the intervention and the control group did not differ with respect to gender, $\chi^2(1) = 1.65, p = .223$, Cramer's $V = .05$ and prior brand use, $t(702) = 1.09, p = .275, d = .08$. However, the intervention and the control group did differ with respect to age, $t(702) = 4.29, p < .001, d = .33$. The children in the intervention group ($M = 9.4; SD = 1.01$) were slightly older than the children in the control group ($M = 9.1; SD = 0.77$). Also, to determine whether age, gender, and prior brand use were correlated with the dependent variables, Pearson's correlation analyses were conducted. These analyses showed that gender, age, and prior brand use were significantly correlated with the dependent variables at the pretest measurement (see ESM 5). Therefore, age, gender, and prior brand use were included as covariates in the analyses as a robustness check (see Plan of Analyses, details in ESM 6)

Main Effects of the Intervention

To test the main effects of the intervention (H1), we used Bayesian mixed-effects models carried out in R using the brms package (Bürkner, 2017). For more details on our plan of analyses, see ESM 7. For the Bayesian analyses, we deemed a coefficient statistically significant if the associated 95% posterior credible interval was non-overlapping with 0. We report unstandardized regression coefficients (*B*; all continuous predictors were standardized but not the dependent variables; categorical predictors were sum-to-zero coded: The intervention group was coded as -1 and the control group as $+1$, thus a negative regression coefficient for a condition effect indicates higher values on the DV for the intervention compared with the control group). We observed that each dependent variable (i.e., their score at Time 2 on the respective scale) was significantly predicted by the respective score at Time 1 (i.e., pretest). The posttest variables understanding selling intent and understanding persuasive tactics differed significantly between intervention groups (selling intent: $B = -0.06, SE = 0.03, 95\% CI [-0.11, -0.0007]$; tactics: $B = -0.10, SE = 0.03, 95\% CI [-0.16, -0.03]$). See Table 1 for the means and standard deviations of all measures for the intervention and control group. In addition, there was a significant interaction between intervention group and Time 1 score for the variable advertising skepticism ($B = 0.05, SE = 0.03, 95\% CI [0.02, 0.10]$). On overview of all the results is provided in ESM 8.

As mentioned in our plan of analyses (ESM 6), we ran two robustness checks: We once repeated the multivariate

analysis with the covariates gender, age, and prior brand use (details in ESM 9), and we ran ordinal univariate item-level analyses, with and without the added covariates (details available upon request). The effect of the intervention on posttest understanding persuasive tactics scores was significant in all these analyses, indicating a robust effect. The intervention effect on understanding advertising's selling intent and the interaction between Time 1 and intervention on advertising skepticism were significant in none of the robustness checks. Accordingly, we only deem the intervention effect on understanding advertising's persuasive tactics trustworthy. Also, from the a priori power analyses, we would expect that we had more than sufficient power to detect even small effects (as our sample size was a bit larger than what the power analysis indicated). Thus, any real effect – if there is one – on the variables of understanding selling intent and advertising skepticism is most likely very small and thus perhaps also negligible.

Our analysis investigating the stability of the intervention effects over time compared the scores of the intervention group at Time 3 (follow-up) with the scores of the control group at Time 2 (controlling for Time 1 scores and the possible interaction between condition and Time 1 scores). Understanding or persuasive tactics showed a significant effect with higher scores of the intervention group at Time 3 compared with the control group at Time 2, suggesting that the effect of the intervention was still detectable at the follow-up period ($B = -0.15, SE = 0.04, 95\% CI [-0.22, -0.07]$). As in the previous multivariate model, we observed that each Time 1 score significantly predicted the respective Time 2 score, and we again observed a significant condition effect for understanding advertising's selling intent ($B = -0.13, SE = 0.03, 95\% CI [-0.19, -0.06]$). In addition, we observed a significant condition effect for understanding of persuasive intent ($B = -0.14, SE = 0.04, 95\% CI [-0.23, -0.06]$). Means and standard deviations are reported in Table 2. On overview of all the results is provided in ESM 10. The robustness check model with the covariates age, gender, and prior brand use replicated these three significant condition effects (tactics: $B = -0.15, SE = 0.03, 95\% CI [-0.21, -0.09]$; selling intent: $B = -0.12, SE = 0.03, 95\% CI [-0.18, -0.06]$; persuasive intent: $B = -0.13, SE = 0.03, 95\% CI [-0.19, -0.07]$). For more details see ESM 8). Thus, these results suggest that the effect of the intervention on understanding advertising's persuasive tactics seems to persist beyond the immediate time after the intervention, further corroborating its robustness. More tentatively, there might be evidence that the intervention could have a more longer-term effect on the additional constructs of understanding selling and persuasive intent; however, as these effects were not observed at Time 2, we are hesitant to interpret these effects as strong before an independent study replicates them.

Table 2. Regression weights of the conceptual model

Effect of	On	<i>B</i>	<i>SE B</i>	95% CI	β
Intervention	Motivation to use advertising coping strategies	-.16*	0.07	[0.104, 0.267]	-.07
	Ability to use advertising coping strategies	-.01	0.04	[-0.083, 0.072]	-.00
	Understanding persuasive tactics	.18***	0.04	[-0.307, -0.007]	.14
Motivation to use advertising coping strategies	Use of coping strategies	.19***	0.03	[0.130, 0.261]	.23
Ability to use advertising coping strategies	Motivation to use advertising coping strategies	.32***	0.06	[0.189, 0.436]	.18
	Use of coping strategies	.48***	0.06	[0.365, 0.583]	.31
Understanding persuasive tactics	Ability to use advertising coping strategies	.18***	0.03	[0.107, 0.257]	.20
	Use of coping strategies	-.07	0.05	[-0.180, 0.046]	-.05
Use of coping strategies	Advertised product desire	-.03	0.02	[-0.075, 0.011]	-.05
	Advertised product choice	.01	0.02	[-0.046, 0.049]	.01
Advertised product desire	Advertised product choice	.95***	0.04	[0.870, 1.045]	.64

Note. * $p < .05$; *** $p < .001$.

Indirect Effects of the Intervention

To test the indirect effects of the intervention on children's use of advertising coping strategies and advertising susceptibility via their motivation and ability to use coping strategies (H2 and H3), we used structural equation modeling (Amos 25.0). Since the mixed-effects analyses showed an unexpected significant main effect of the intervention on children's understanding of advertising's persuasive tactics, we explored the indirect effect of the intervention on use of advertising coping strategies and advertising susceptibility via understanding of advertising's persuasive tactics as well. The hypothesized model is presented in Figure 1. Two model fit indices were used: the comparative fit index (CFI), and the root mean square error of approximation index (RMSEA). CFI values between .90 and .95 were considered as being acceptable, CFI values above .95 as being good. In addition, RMSEA values between .05 and .08 were considered as being acceptable, RMSEA values below .05

as being good (Byrne, 2001). For more details on our plan of analyses, see ESM 4.

The hypothesized model resulted in an acceptable model fit $\chi^2(df = 31; N = 704) = 132.76, p < .001$, CFI = .95, RMSEA = .07 with p -close .006. Model modification indices were explored and model fit was improved by allowing for a relationship between understanding advertising's tactics and ability to use coping strategies and between motivation and ability to use coping strategies. The adjusted model resulted in good fit: $\chi^2(df = 29; N = 704) = 73.56, p < .001$, CFI = .98, RMSEA = .05 with p -close .64. The structural equation model is presented in Figure 2. Table 2 shows all direct effects. In line with the mixed-effects analyses, the results of the model showed no significant direct effect of the intervention on ability to use advertising coping strategies. Also, as was found in the mixed-effects analyses as well, the results indicated that there was a direct effect of the intervention on understanding of advertising's persuasive tactics. Interestingly, results now showed a

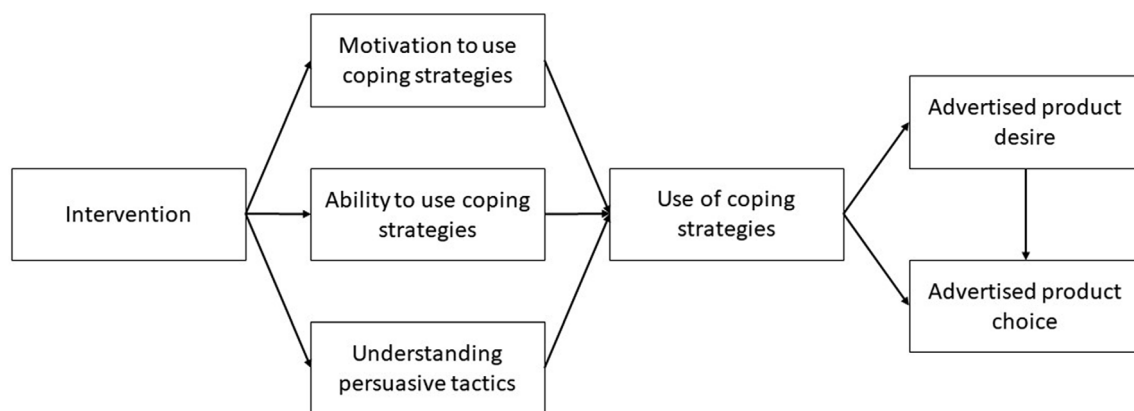


Figure 1. Hypothesized model for the indirect effect of the intervention via motivation (H2), ability (H3), and understanding persuasive tactics (additional).

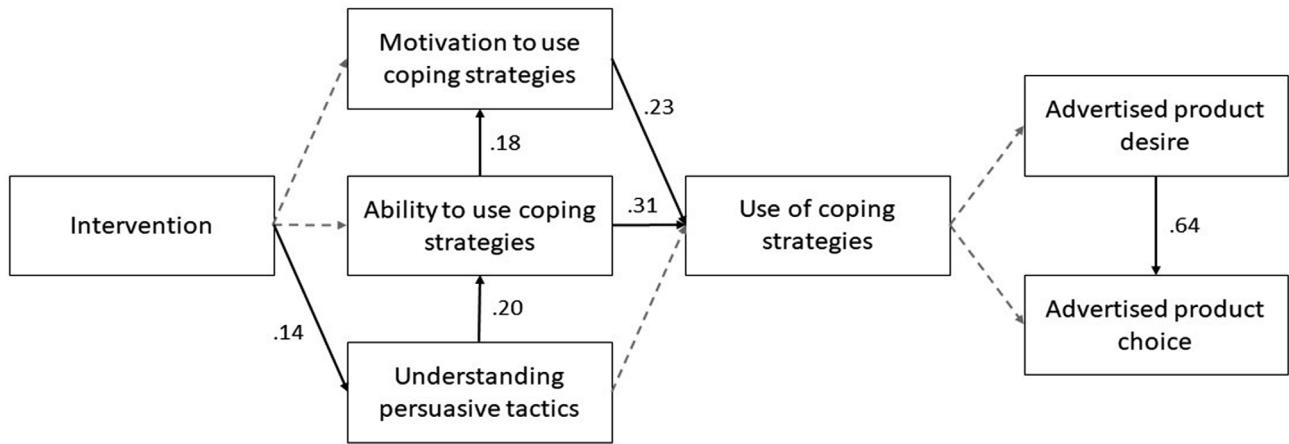


Figure 2. Structural equation model for the indirect effect of the intervention via motivation (H2), ability (H3), and understanding persuasive tactics (additional). Coefficients represent standardized beta weights, all significant at $p < .001$. Dotted arrows are nonsignificant pathways.

significant direct effect of the intervention on motivation to use advertising coping strategies. We did not find this effect in the mixed-effect analyses.

With regard to the indirect effects, the results showed no significant indirect effects of the intervention on children's advertising susceptibility (i.e., advertised product desire and advertised product choice) via motivation and ability to use coping strategies and subsequently actual use of coping strategies. Therefore, H2 and H3 are rejected. Interestingly, although we did not hypothesize any indirect effects of the intervention via children's understanding of advertising's tactics, the results showed a significant indirect effect of the intervention on children's ability to use coping strategies via their understanding of advertising's tactics (indirect = 0.03, $SE = 0.01$, 95% CI [0.015, 0.061]). No other significant indirect effects of the intervention were found. Thus, the intervention increased children's understanding of persuasive tactics, which in turn increased their ability to use coping strategies. However, this intervention-induced increase in understanding and ability was in turn not related to any changes in the children's actual use of coping strategies or their advertising susceptibility.

Discussion

This study investigated an intervention named Ad Masters that was designed to increase the knowledge, motivation, and ability children need to effectively cope with advertising by combining an unconventional combination of advertising literacy education methods with behavior regulation techniques (i.e., emotion labeling, self-persuasion, and implementation intentions). Based on our findings, five main conclusions can be drawn.

First, the Ad Masters intervention has a robust long-term (3 months) positive effect on children's understanding of

advertising's persuasive tactics. This result is in line with earlier research, showing that advertising literacy training can increase children's cognitive advertising literacy, including their understanding of advertising tactics (De Jans, Hudders, & Caubergh, 2017; Nelson, 2016). No robust intervention effects were found for any of the other cognitive advertising literacy components (i.e., understanding selling and persuasive intent). An explanation for this could be that of all cognitive advertising literacy components, at pretest, children scored lowest on understanding persuasive tactics. This suggests that, for the children participating in this study, the greatest room for improvement was in their understanding of advertising tactics. This is in line with earlier research showing that the age of 10 marks an important shift in children's understanding of advertising tactics (Rozendaal, Buijzen, & Valkenburg, 2011). Also, no intervention effects on children's attitudinal advertising literacy were found. An explanation could be that the intervention materials did not explicitly focus on installing skeptical attitudes in children.

The second conclusion is that the intervention has no direct effects on children's motivation and ability to use coping strategies. Although we did find some evidence for a direct effect of the intervention on children's motivation to use coping strategies in the structural equation analysis, we did not find support for such an effect in the mixed-effects analyses. Therefore, we do not consider this as a robust effect. Not finding a direct effect of the intervention on motivation and ability is surprising because the intervention contained training modules and exercises that, on the basis of theory and earlier research, were expected to stimulate these mechanisms. There are several possible explanations for the absence of an intervention effect on children's motivation and ability to cope with advertising. A first explanation is the duration of the intervention. The intervention consisted of six 60-min sessions. Only three

of these sessions focused on training children's motivation and ability to cope with advertising. Although research among adults has shown that brief interventions can significantly improve motivation and ability to perform a certain behavior (e.g., Banerjee & Greene, 2007; Briñol, McCaslin, & Petty, 2012; Gollwitzer & Sheeran, 2006; Hagger & Luszczynska, 2014; Müller et al., 2009), this may work differently among children. Future research could explore whether a longer intervention period that provides more time for pupils to practice applying coping strategies and cultivate intrinsic motivation to actually use those coping strategies increases Ad Masters' effectiveness on children's motivation and ability to cope with advertising.

Another explanation for the absence of intervention effects on children's motivation and ability to use advertising coping strategies is that the intervention may not have been successful in addressing the individual learning needs of the participating children. Like many media literacy education programs, the Ad Masters intervention was set up as a traditional educational program in which the pupils sit at their desk, listen to the trainer's lesson together, and all make the same assignments. A flaw of this "one size fits all" teaching approach is that it assumes that all students learn in the same way. However, owing to individual differences, children vary in learning styles and in prior levels of advertising literacy, motivations, and coping skills and as a result they learn and advance in different ways and at different speed. Future research on advertising and media literacy education could explore the possibilities of differentiated or adapted learning, a style of teaching that gives students the power to tailor their learning experiences in a way that best suits their unique needs (Kerr, 2015; Morgan, 2014).

A final possible explanation for not finding any main effects of the intervention on children's motivation and ability to cope with advertising has to do with the intervention techniques used. Even though the intervention techniques were carefully selected based on extensive literature research and have a strong theoretical foundation, they may not have been successful in reaching their goals for this particular target group (8–12-year-olds) or for this particular behavior. Future research could explore other intervention techniques that are more effective in stimulating children's motivation and ability to engage in advertising coping behavior (see Michie et al., 2013).

Although no direct effects of the intervention on children's motivation and ability to cope with advertising were found, the structural equation analysis did show an indirect effect of the intervention on children's ability via their understanding of advertising's persuasive tactics. This indicates that having knowledge of persuasive advertising tactics is an important precondition for feeling able to cope with advertising, and more importantly that the interven-

tion is only successful in stimulating the ability of children to cope with advertising, if there is also an increase in knowledge of the tactics that advertisers use.

The third conclusion that can be drawn from this study is that the intervention-induced changes in children's understanding of advertising's persuasive tactics do not lead to increased use of coping strategies or reduced advertised product desire and choice. This finding is in line with earlier research showing that increasing children's advertising literacy through intervention does not automatically change the way children cope with advertising (Livingstone & Helsper, 2006; Nairn & Fine, 2008).

The fourth conclusion is that children who are more motivated and better able to use advertising coping strategies actually do use such those strategies more often. This confirms our expectation that motivation and ability to use coping strategies function as important mechanisms in determining their advertising coping behavior. This finding is in accordance with theories on behavior regulation and behavioral change, which indicate that when the perceived ability to perform a behavior and the motivation or intention to do so are higher, people are more likely to put effort in regulating their behavior (Ajzen, 1991; Bandura, 1997; Baumeister & Vohs, 2007; Deci & Ryan, 2000).

Finally, our fifth conclusion is that the use of advertising coping strategies does not relate to children's advertised product desire and advertised product choice. An explanation could be that in the current study we used self-report to measure children's use of coping strategies, which has several disadvantages that decrease the validity of these measures (e.g., social desirability, inaccurate recall; Baumeister, Vohs, & Funder, 2007). Future research could explore other data collection methods to measure children's advertising coping behavior and advertising responses that are less subject to these types of response bias (e.g., observation of behavior in digital simulation environments or games; Shute, Wang, Greiff, Zhao, & Moore, 2016).

To conclude, the present study does not provide evidence for the effectiveness of the Ad Masters intervention in stimulating children's advertising coping behavior. However, to establish the effectiveness of an intervention, randomized controlled trials (RCTs) are not the only method on which conclusions should be drawn. Future research could use qualitative methods (e.g., observations, in-depth interviews) alongside quantitative methods to explore the working and effectiveness of the Ad Masters intervention programs.

Theoretical Implications

Although the results of the current study do not provide evidence for the intervention's effectiveness, the study does provide understanding of the theoretical mechanisms that explain children's use of advertising coping strategies.

In the child and advertising literature it is traditionally assumed that children can defend themselves against the persuasive appeal of advertising by gaining a better understanding of advertising's intent and tactics (Brucks et al., 1988; Gunter, Oates, & Blades, 2005; Kunkel et al., 2004; Livingstone & Helsper, 2006). The findings of the current study extend this traditional cognitive approach to advertising defenses by showing that motivation and ability to use advertising coping strategies are more important factors than knowledge in determining children's advertising coping behavior. As such, the current study lays a foundation for a new theoretical behavior regulation-oriented approach to children's advertising defenses. This opens up new horizons for future research on children's coping with advertising and other types of media content (e.g., social media images, fake news).

Practical Implications

An important question in the debate about children and media is how to empower children to cope with off- and online commercial media content. The findings of this study are relevant to this debate and offer concrete implications for advertising literacy educators and intervention developers. The study showed that increasing children's advertising knowledge, specifically their understanding of advertising's tactics, through advertising education does not automatically stimulate them to use advertising coping strategies more often. This indicates that education programs that focus solely on teaching children about the intent and tactics of advertising may not be effective in stimulating their coping behavior. The current study showed that children's motivation and ability to use advertising coping strategies are important factors in children's actual coping behavior. Advertising intervention developers are thus advised to further explore intervention techniques and strategies that can increase children's motivation and ability to cope with advertising.

Electronic Supplementary Materials

The electronic supplementary material is available with the online version of the article at <https://doi.org/10.1027/1864-1105/a000262>

ESM 1. A priori power analysis

ESM 2. Ad Masters intervention

ESM 3. Overview of items

ESM 4. Reliability scores (Cronbach's alpha) for the main variables)

ESM 5. Correlations between all independent, mediating, and dependent variables and covariates at pretest (Time 1)

ESM 6. Plan of analysis

ESM 7. Time 2 as a function of Time 1 and condition (without covariates)

ESM 8. Time 2 as a function of Time 1 and condition with covariates

ESM 9. Time 3 (intervention)/Time 2 (control) as a function of Time 1 and condition (without covariates)

ESM 10. Time 3 (intervention)/Time 2 (control) as a function of Time 1 and condition with covariates

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