Online Appendix A

A1 Construction of Indexes vs. Scales

Indexes (and not scales) were constructed with those items for which notable differences can be expected between ad formats, and more specifically the awareness, recognition, liking, and appropriateness evaluation of these formats. This is because an index summarizes (or builds up) indicators that "compensate" each other without considering their intercorrelation. For example, children's awareness of the existence of TV commercials is much higher compared with other ad formats, but when awareness scores for all formats are added up, a single construct emerges representing children's awareness of contemporary formats in general. Therefore, it is contrasted with scales, which add up alternative indicators of the same, latent concept (Babbie, 2012). For instance, the outcomes' "attitudes toward advertising" and "moral advertising literacy" consist of items that are all considered to be expressing a similar, general disposition with which children may approach all kinds of advertising. Cronbach's alpha is only calculated for scales, as it is not suitable for indexes.

A2 Description of Studied Ad Formats within Survey

"The questions below are about…" 1) "…TV commercials. These are short advertising movies interrupting TV programs, or shown between different TV programs"; 2) "…product placement, whereby advertising is made within TV programs and movies, by showing brands and products. This is for instance the case when you see an actor consuming a beverage of a particular brand"; 3) "…advergames. These are free games on the Internet that are actually advertising, and in which you often have to play with the brands and products (to increase your score)"; 4) "…online banners. These are images (in the shape of bars, posters, or pop-ups) on websites that contain advertising, and on which you can click to go to the website of a particular

brand or product"; 5) "…pre-roll advertising. Pre-rolls are ad movies on the Internet that you have to watch before you can see the movie you actually looked up. This is the case on YouTube, for instance, where you often get to see an ad movie first."

Note: These specific formats were chosen because they are often aimed at minors (see Cauberghe, De Pelsmacker, Hudders, Panic, & Destoop, 2012) and each has unique characteristics that make them different from the others. In brief, TV ads mainly revolve around spreading commercial messages, online banners spread such messages on virtually all websites, product placement integrates these messages in editorial media content, advergames make such media interactive, and pre-roll videos use retargeting techniques that allow advertising to be tailored personally to children's preferences.

A3 Rationale for Using Multilevel Techniques

Multilevel analysis offers a great added value when examining how people are influenced by their environment, and especially when that environment is a larger group of which people are a part, e.g., when studying children in their class contexts (Snijders & Bosker, 2012). In such cases, children can be considered meaningfully "nested" in classes. Importantly, this implies that two randomly selected children from the same class will be more alike than two children from a different class because children from the same class are all exposed to the same influences (e.g., teacher and classmate abilities), which may affect their individual outcomes (such as literacy achievement). This further implies that the scores on these outcomes are likely to be more similar within a single class than when comparing them with the scores from children from other classes. In this regard, single-level multiple-regression models may fall short, as they assume that students are independent (statistical) units having uncorrelated residual scores within the same class. Consequently, as the clustering of these students within classes is ignored, the standard

errors of the regression coefficients may be underestimated, resulting in too narrow confidence intervals and too small p-values (which are most severe for predictors measured at the group level). This could ultimately lead to finding and reporting "real" effects on an outcome, while the findings may actually be attributed to chance. To overcome this issue, or, in other words, to estimate correct standard errors, analysis should allow for variation between groups. This can be achieved by using multilevel techniques, as they make it possible to simultaneously examine group- (L2) and individual-level effects (L1) and their interactions (L1 x L2) on individual-level outcomes, while controlling for the interdependence of individuals within those groups (here: classes). Furthermore, multilevel analysis also permits examining the causes of differences both between groups, as between individuals within groups. Therefore, and perhaps most interestingly, it allows identification of macro-processes that affect individuals over and above the effects of analogous individual-level variables (Roux, 2002).

A4 Analysis Procedure

Step 1. Bivariate (Pearson) correlation coefficient analyses were performed to explore associations between study outcomes (i.e., the three dimensions of ad literacy) and the other variables included in the study (see Online Appendix B).

Step 2. The effects of the variables that were correlating significantly in the previous step (per outcome) were analyzed via multilevel techniques, to check whether the relationships still hold when considering the data's nested structure, and to examine the distinct contribution per predictor (block) (set apart by ";" in the reporting of results). This was done separately for the effects of L1 variables as measured among a) the children and b) their parents, and for the L2 variables c) as aggregated from the children and parents' data and d) the teachers' data.

For the L1 individual level (a and b), successive models are expanded with new blocks of variables in a thematic manner (e.g., first sociodemographics, then cognitive components, attitudinal predictors, measures of coping strategies, etc.). Possible interactions are explored, in the first place between cognitive and attitudinal components (cf. literature study). In each subsequent model, the effects that proved to be insignificant in the previous model are removed.

For the L2 group/class level (c and d), each model analyzes each L2 variable separately, as the current group-level sample size only allows for a maximum of two to three L2 variables per model (Snijders & Bosker, 2012). More specifically, for each L2 group predictor, the following is repeated in three subsequent models. First, the main effect of the L2 variable is analyzed. Second, it is tested as to whether this L2 effect becomes insignificant when adding its L1 analog variable (if available). As this could indicate the existence of an indirect effect of the L2 variable on the outcome through the L1 variable, such relations are investigated further with dedicated mediation analyses. Third, it is explored whether there is a cross-level interaction effect between the group/class and individual level variables (indicating a "reinforcing" or "weakening"' effect of the L2 on the L1 variable). All significant interaction effects are further analyzed with dedicated moderation analyses to check their linearity (by assessing the effect of X on Y on three values of the moderator).

It should be noted that to estimate peer-group (c) effects, the analyses do not use the aggregate of the outcome as an L2 group predictor (e.g., the effect of class attitudes toward advertising on the same attitudes of the individual children), as using a variable to predict itself should be avoided (Manski, 1993).

For brevity and overview, the results section with regard to this second step (see Online Appendix C) only covers significant effects, with a focus on mediation and interaction.

Step 3. The article works toward more integrated multilevel models, to explain observed variance per outcome, and to determine the predictors' (that proved to have a significant effect in the previous step) combined contributions. The null model (i.e., the unconditional model, without predictors) allows calculating the variance partition coefficient (VPC), which indicates the proportion of variance attributed to the group vs. the individual level. The first model adds all the significant L1 child variables (a) from the exploratory ML analyses simultaneously. The next model adds the L1 parent variables (b) on top of that, thereby controlling for the child variables from the first model. (These parent variables are removed from the following models, however, as retaining them would lower the sample size too much.) The next model(s) add(s) L2 peers' aggregate variables (c – controlling for a), and the final model(s) exclude(s) insignificant effects from the previous model, and adds L2 teachers' effects (d – controlling for a). In case of too many L2 variables to be tested, these are analyzed in separate models (though each time controlling for a). These results are presented in tables and are fully covered and discussed in the main article – mediation effects are not included, however, as the presence of L1 variables would render their L2 analogs insignificant.

Online Appendix B

Table B1

Pearson Correlations between Study Variables

	cogAL		attAL		morAL	
L1: child						
Advertising literacy (outcomes)						
cogAL (recognition formats)	-		0,013		0,127	*
attAL (liking advertising)	0,013		-		0,037	
morAL	0,127	*	-0,037		-	
Demographics						
Gender (refcat: fem.)	0,191	**	-0,007		-0,087	
Age	0,132	**	0,266	**	-0,045	
Media use	0,113	*	0,141	**	-0,066	
Cognitive aspects						
Awareness formats	0,703	**	0,052		0,098	
Attitudinal aspects						
Liking formats	-0,116	*	-0,501	**	0,115	*
Finding formats appropriate	0,041		-0,376	**	0,032	
Coping strategies						
Reflecting on ads	0,048		-0,108	*	0,485	**
Avoiding ads	0,252	**	0,196	**	0,146	**
Adv. product desire	-0,023		-0,175	**	0,123	*
Good feeling brand/product	-0,029		-0,228	**	0,168	**
L1: parent						
Demographics						
Gender (refcat: fem.)	-0,103		-0,036		0,031	
Age	0,018		0,136		0,014	
Education: master degree (vs rest)	0,154	*	0,031		0,028	
Family size (# children)	-0,003		-0,177	*	0,032	
Cognitive aspects						
Awareness formats	0,074		-0,095		0,064	
cogAL (recognition formats)	0,088		-0,106		0,157	*
Attitudinal aspects						
Liking formats	-0,066		-0,025		-0,141	
Finding formats appropriate	0,014		-0,074		-0,071	
morAL	0,089		-0,023		0,119	
Coping strategies						
Reflecting on ads	0,072		0,036		0,055	
Avoiding ads	0,154	*	-0,034		0,114	
Adv. product desire	-0,029		0,030		0,030	
Good feeling brand/product	-0,040		0,138		-0,005	
Parental advertising mediation						
Discussing new ad formats	0,112		0,014		-0,028	

Notes. *$p < .05$; **$p < .01$

Table B2

Pearson Correlations between Study Variables (continued)

	cogAL		attAL		morAL	
L2: peers (children aggregates)						
Demographics						
Gender ratio (% boys)	0,042		0,046		0,016	
Grade (6th vs 4th)	0,128	*	0,308	**	-0,051	
Media use (mean)	0,090		0,257	**	0,017	
Par. master degree (> median %)	0,079		0,222	**	0,101	
Cognitive aspects						
Awareness (mean)	0,283	**	0,169	**	-0,016	
cogAL (recognition formats) (mean)	0,387	**	0,042		0,035	
Attitudinal aspects						
attAL (liking advertising) (mean)	0,035		0,426	**	-0,043	
Liking formats (mean)	-0,070		-0,331	**	0,069	
Finding formats appr. (mean)	-0,006		-0,293	**	0,012	
morAL (mean)	0,057		-0,077		0,241	**
Coping strategies						
Reflecting on ads (mean)	-0,013		-0,072		0,147	**
Avoiding ads (mean)	0,160	**	-0,079		0,038	
Adv. product desire (mean)	-0,067		-0,226	**	0,035	
Good feeling brand/product (mean)	-0,085		-0,236	**	0,081	
L2: teacher						
Demographics						
Gender (male vs female)	-0,017		0,123	*	0,049	
Age	0,061		0,038		-0,081	
Cognitive aspects						
Awareness formats	0,054		0,093		-0,029	
cogAL (recognition formats)	0,062		0,015		-0,103	*
Attitudinal aspects						
Liking formats	-0,074		-0,042		0,039	
Finding formats appropriate	0,023		-0,093		0,154	**
morAL	-0,051		-0,108	*	0,059	
Coping strategies						
Reflecting on ads	-0,124	*	0,017		0,012	
Avoiding ads	0,047		-0,049		-0,011	
Adv. product desire	0,059		-0,145	**	0,073	
Good feeling brand/product	0,000		-0,085		0,122	*
Teacher advertising mediation						
Discussing new ad formats	0,016		0,087		-0,118	*

Notes. *$p < .05$; **$p < .01$

Online Appendix C

C1 Cognitive Advertising Literacy: Recognition of Advertising Formats

In Step 2, the significant variables from the previous step are tested via exploratory multilevel regression analyses, showing that children's cognitive advertising literacy is significantly related to:

a) their gender (refcat. = girl; $\beta = 0.26$, $SE = 0.07$, $p < .001$) and age ($\beta = 0.08$, $SE = 0.04$, $p < .05$); ad-format awareness ($\beta = 0.62$, $SE = 0.03$, $p < .001$) – which explains away the age effect from the previous block; interaction between ad-format awareness and ad-format liking ($\beta = 0.11$, $SE = 0.05$, $p < .05$); ad avoidance ($\beta = 0.06$, $SE = 0.02$, $p < .001$); and the interaction between ad avoidance and ad-format liking ($\beta = -0.05$, $SE = 0.02$, $p < .05$). Additionally, dedicated mediation and moderation analyses (Hayes, 2013) confirm the indirect effect of age on cognitive advertising literacy through ad-format awareness ($b = 0.06$, $SE = 0.02$, $p < .001$) (PROCESS Model 4) and show that the negative effect of ad-format liking on cognitive advertising literacy ($b = -0.14$, $SE = 0.06$, $p < .05$) only occurs among the highest values ($M = 4.66$) of ad avoidance (PROCESS Model 1).

b) their parents' educational attainment level ($\beta = 0.26$, $SE = 0.12$, $p < .05$); and ad avoidance ($\beta = 0.09$, $SE = 0.04$, $p = .05$).

c) ad-format awareness in the class ($\beta = 0.86$, $SE = 0.16$, $p < .001$) – which is explained away by the child's awareness; and the interaction between child and class awareness ($\beta = -0.26$, $SE = 0.13$, $p < .05$); and ad avoidance in class ($\beta = 0.32$, $SE = 0.14$, $p < .05$) – explained away by the child's ad avoidance. Additional mediation analyses (PROCESS Model 4) confirm the indirect effect of class awareness on cognitive advertising literacy through child awareness ($b = 0.63$, $SE = 0.12$, $p < .001$); and the

indirect-only effect of class ad avoidance on cognitive advertising literacy through child ad avoidance (b = 0.11, SE = 0.03, p < .001).

d) their teacher's reflecting on ads (β = -0.11, SE = 0.05, p < .05).

C2 Attitudinal Advertising Literacy: Disliking Advertising in General

Step 2 tests the significant variables from Step 1 through exploratory multilevel analyses, demonstrating that children's attitudinal advertising literacy is significantly related to:

a) their age (β = 0.19, SE = 0.06, p < .01); ad-format liking (β = -0.65, SE = 0.10, p < .001); and ad avoidance (β = 0.08, SE = 0.04, p < .05).

b) their family size (β = -0.25, SE = 0.09, p < .01).

c) their class grade level (β = 0.66, SE = 0.14, p < .001); media consumption (β = 0.79, SE = 0.26, p < .01); parental educational attainment (β = 0.53, SE = 0.18, p < .01); ad-format awareness (β = 0.73, SE = 0.37, p < .05); the interaction between child and class ad-format awareness (β = 0.67, SE = 0.30, p < .05); ad-format liking (β = -1.66, SE = 0.30, p < .001) – over and above the child's liking; ad-format appropriateness evaluation (β = -1.56, SE = 0.38, p < .001) – over and above the child's evaluation; advertised product desire (β = -0.74, SE = 0.29, p < .05) – over and above the child's desire; and feeling good about advertised brands/products (β = -1.30, SE = 0.47, p < .05) – over and above the child's feelings.

d) none of the teacher variables.

C3 Moral Advertising Literacy: Reflecting on Advertising's Appropriateness

Step 2 explores the effects of significant Step 1 variables via multilevel techniques, finding that children's moral advertising literacy is significantly associated with:

a) their ability to recognize ad formats (β = 0.19, SE = 0.08, p < .05); ad-format liking (β = 0.19, SE = 0.07, p = .01); reflecting on ads (β = 0.38, SE = 0.04, p < .001) and

avoiding ads (β = 0.10, *SE* = 0.04, $p < .01$) – these two "coping" variables explain away the effects of recognition and liking (as added in the previous block). Regarding the latter, additional mediation analyses (via PROCESS Model 4; Hayes, 2013) show three indirect effects: a positive effect of recognition on moral advertising literacy through ad avoidance (b = 0.04, *SE* = 0.02, $p < .05$); a positive effect from ad-format liking on moral advertising literacy via reflecting on ads (b = 0.12, *SE* = 0.04, $p < .01$); and a negative effect from ad-format liking on moral advertising literacy through ad avoidance (b = -0.06, *SE* = 0.02, $p < .01$).

b) their parents' ability to recognize ad formats (β = 0.24, *SE* = 0.11, $p < .05$).

c) their class' reflecting on ads (β = 0.44, *SE* = 0.15, $p < .05$) – which is explained away by the child's own ad reflection. Further mediation analysis (PROCESS Model 4) shows an indirect-only positive effect from the class' ad reflection on moral advertising literacy via the child's ad reflection (b = 0.41, *SE* = 0.08, $p < .001$).

d) their teacher's ability to recognize ad formats (β = -0.20, *SE* = 0.10, $p < .05$) – over and above the child's own recognition abilities; ad-format appropriateness evaluation (β = 0.19, *SE* = 0.09, $p < .05$); feeling good about advertised brands/products (β = 0.16, *SE* = 0.06, $p < .05$) – over and above the child's own feelings; discussing new ad formats (β = -0.21, *SE* = 0.09, $p < .05$) – over and above the positive effect of the child's ad-format awareness; and the interaction between the child's ad-format awareness and the teacher's discussing of new ad formats (β = -0.38, *SE* = 0.12, $p < .01$). Concerning the latter, moderation analysis (PROCESS model 1) reveals that the positive effect of the child's ad awareness on moral advertising literacy (b = 0.33, *SE* = 0.09, $p < .001$) only occurs among the lowest value (M = 2.25) of the teacher's discussing the new ad formats.

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