

The development and testing of a pictogram signaling advertising in online videos

Online appendix



Figure 3. Existing Kijkwijzer pictograms (classification system for audiovisual media)

Table 4. Exploratory analysis comparing three videos used in online experiment (not pre-registered)

	Kalvijn	Thomas	Lotte	Significance
Influencer familiarity	58.1%	36.9%	5.1%	$\chi^2 (2) = 134.53, p < .001$
Influencer liking	6.42 ^{ab}	6.67 ^a	6.14 ^b	$F(2, 653) = 15.32, p = .020$
Watching influencer frequency	1.59 ^a	1.46 ^a	1.14 ^b	$F(2, 653) = 34.28, p < .001$
Video familiarity	46.7%	46.7%	6.7%	$\chi^2 (2) = 10.44, p = .005$
Video liking	6.45 ^a	7.03 ^b	6.11 ^a	$F(2, 653) = 12.61, p < .001$
Brand use	2.08 ^a Pringles	2.28 ^b Bol.com	1.77 ^c Taksi	$F(2, 653) = 35.10, p < .001$

Note. Scores represent percentages (indicated with %) or means. Means with different superscript in same row differ significantly from each other at $p < .05$ (Bonferroni post hoc comparisons).

Preregistered mediation analyses not reported in manuscript

Following our preregistration, we ran mediation analyses using model 4 of the PROCESS v4.0 (Hayes 2022) in IBM SPSS Statistics 28 for skepticism and disliking, with the pictograms as independent variable (using indicator coding with no pictogram as reference category), the conceptual PK variables as mediators in parallel, and our covariates. Results (see Table 5 and 6) confirmed the non-significant effects of the pictograms on ad recognition, understanding of selling intent, and understanding of persuasive intent, and revealed no significant indirect effects on skepticism of disliking of the three pictograms, thus rejecting H3.

H4 was tested with a MANCOVA with the four pictogram conditions as factor (i.e., no pictogram, #AD pictogram, megaphone #AD pictogram, influencer pictogram), video as additional factor, and the five PK variables as dependent variables. Results showed significant differences between the videos, Wilks' Lambda = 0.95, $F(10, 1270) = 3.45$, $p < .001$, but no significant interaction effects of the pictograms and video, Wilks' Lambda = 0.94, $F(30, 2542) = 1.22$, $p = .192$. More specifically, we found significant differences between the videos regarding skepticism, $F(2, 639) = 4.93$, $p = .008$, and disliking, $F(2, 639) = 10.13$, $p < .001$, but no differences in conceptual PK (p 's $> .113$). Additionally, we ran moderated mediation analyses (model 7 in PROCESS) for skepticism and disliking, with the pictograms as independent variable (using indicator coding with no pictogram as reference category), the conceptual PK variables as mediators in parallel, video as moderator, and our covariates. Results showed non-significant interactions, indexes of moderated mediation, direct and indirect effects. Thus, although we did not find any significant effects of the pictograms, our results do support H4: the direction and strength of effects of the pictograms did not differ between the videos.

To answer RQ3, we ran the same analyses with age category as factor (instead of video), and found no significant effects differences between age categories, Wilks' Lambda = 0.98, $F(10, 1270) = 1.01$, $p = .430$, nor significant interaction effects of the pictograms and age categories, Wilks' Lambda = 0.96, $F(30, 2542) = 0.77$, $p = .805$. Thus, any effects of the pictograms did not differ between age categories.

Table 5. Detailed outcomes of mediation analyses on Scepticism (Model 4)

	IV > Mediator	Mediator > DV	Total effect IV > DV	Direct effect IV > DV	Indirect effect
Ad recognition		-0.03 (0.03)			
#AD	0.02 (0.13)		-0.14 (0.10)	-0.16 (0.10)	-0.00 (0.01) CI [-0.01; 0.01]
Megaphone #AD	0.03 (0.13)		0.03 (0.10)	0.01 (0.10)	-0.00 (0.01) CI [-0.01; 0.01]
Influencer	-0.11 (0.13)		0.10 (0.10)	0.07 (0.10)	0.00 (0.01) CI [-0.01; 0.02]
Understanding of selling intent		0.14 (0.04)**			
#AD	0.10 (0.14)				0.01 (0.02) CI [-0.03; 0.06]
Megaphone #AD	0.02 (0.14)				0.00 (0.02) CI [-0.04; 0.05]
Influencer	-0.07 (0.14)				-0.00 (0.02) CI [-0.04; 0.04]
Understanding of persuasive intent		-0.14 (0.05)**			
#AD	-0.03 (0.12)				0.00 (0.02) CI [-0.03; 0.04]
Megaphone #AD	-0.13 (0.12)				0.02 (0.02) CI [-0.01; 0.06]
Influencer	-0.18 (0.11)				0.02 (0.02) CI [-0.01; 0.07]

Note. Table presents unstandardized b-coefficients with bootstrap standard errors in parentheses. IV = Independent Variable, DV = Dependent Variable, CI = 95% bootstrap confidence intervals. ** $p < .01$.

Table 6. Detailed outcomes of Mediation Analyses on Disliking (Model 4)

	IV > Mediator	Mediator > DV	Total effect IV > DV	Direct effect IV > DV	Indirect effect
Ad recognition		-0.03 (0.04)			
#AD	0.02 (0.13)		-0.16 (0.11)	-0.17 (0.11)	-0.00 (0.01) CI [-0.02; 0.01]
Megaphone #AD	0.03 (0.13)		-0.04 (0.11)	-0.05 (0.11)	-0.00 (0.01) CI [-0.02; 0.01]
Influencer	-0.11 (0.13)		-0.01 (0.11)	-0.03 (0.11)	0.00 (0.01) CI [-0.01; 0.02]
Understanding of selling intent		0.16 (0.05)**			
#AD	0.10 (0.14)				0.02 (0.02) CI [-0.03; 0.07]
Megaphone #AD	0.02 (0.14)				0.00 (0.02) CI [-0.04; 0.06]
Influencer	-0.07 (0.14)				-0.00 (0.02) CI [-0.05; 0.05]
Understanding of persuasive intent		-0.10 (0.06)			
#AD	-0.03 (0.12)				0.00 (0.01) CI [-0.02; 0.03]
Megaphone #AD	-0.13 (0.12)				0.01 (0.02) CI [-0.01; 0.05]
Influencer	-0.18 (0.11)				0.02 (0.02) CI [-0.01; 0.06]

Note. Table presents unstandardized b-coefficients with bootstrap standard errors in parentheses. IV = Independent Variable, DV = Dependent Variable, CI = 95% bootstrap confidence intervals. ** $p < .01$.

Pre-registered research questions not reported in manuscript

To examine minors' perceptions of the meaning and preference for one of the pictograms, we also examined the following research questions in the online experiment (Phase 3):

RQ4: What do minors think the three pictograms mean?

RQ5: a) which pictogram do minors prefer, b) why, and c) does pictogram preference differ between age groups?

To answer RQ4, we asked all participants ($N = 656$) of the experiment what they believed the pictogram in their video meant. The open answers revealed that most children correctly answered that #AD (77.8%) and the *megaphone* #AD (64.7%) indicate an advertisement, or that the video is / contains advertising or is sponsored, but this answer was rarely given for the *influencer* pictogram (23.8%). With regard to the *influencer* pictogram, children said that the pictogram meant 'that it costs money' (23.8%), a price (14.3%), and 'that the YouTuber bought the product herself' (9.5%).

Regarding children's preferences (RQ5), results demonstrated that, despite the wrong interpretation of the pictogram, most children (49.2%) preferred the *influencer* pictogram, followed by the *megaphone* #AD (26.5%) and #AD (24.2%). There was no significant difference in pictogram preference between age groups (see Table 7 below), $\chi^2(4) = 7.04, p = .134$.

Table 7. Results of Experiment (Phase 3): Pictogram with best fit according to children 8 – 18 years old

			
8 – 12 years old	27.9	52.0	20.1
13 – 15 years old	28.7	49.1	22.3
16 – 18 years old	22.6	47.2	30.2
Total	26.5	49.2	24.2

Note. Scores represent percentage that chose this pictogram as best fit.

References

Hayes, A.F. 2022. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Third edition.* Guilford publications.