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Picture-based persuasion in advertising: the impact of attractive pictures on verbal ad's content

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Abstract

Purpose – The present study aims to further examine the persuasive effect of pictures in a print ad according to the recipient's ability to process the information and to observe to what extent the presence of a picture could negatively influence recipients' attitude toward the ad's verbal claim.

Design/methodology/approach – Two studies were designed to manipulate the presence vs absence of an attractive/unattractive picture, the kind of verbal claims (affectively based vs rationally based) and the recipient's ability to process the ad (cognitive load vs no cognitive load).

Findings – Main findings showed that the presence of an attractive picture elicited an unfavorable attitude toward the functional verbal claim when recipients were not cognitively charged. Furthermore, it proved to be a mediator of the influence of pictures on attitude toward the ad. The positive influence of an attractive picture on product evaluation and purchase intention was greater under a cognitive load but showed contrasting results for price perceptions. For the unattractive picture, cognitive load was found to be a moderator only when recipients had to infer the product price.

Research limitations/implications – The present research emphasized the negative influence of attractive pictures on functional verbal claims and the moderating role of cognitive load on pictorial stimuli either acting as peripheral or central cues in the persuasive process.

Practical implications – Practitioners may want to consider that an attractive picture in advertising is not always the best route for persuasion, especially when the verbal ad content emphasizes the product's properties.

Originality/value – The present study provides new insights regarding the role of pictures in advertising persuasive effectiveness. Until now, no research had addressed the extent to which the presence of a picture could affect processing of an ad's verbal claims. Additionally, the present study expands research on persuasive communication and affirms the necessity of more intensively investigating the role of pictures in advertising under the rubric of information processing level.

Keywords Advertising, Cognitive load, Information processing, Pictorial claim, Verbal claim

Paper type Research paper

Many studies have been conducted on the persuasive effectiveness of text and pictures in print advertising. Some researchers supported copy as a central element in making an advertisement effective (Chang, 2006; Phillips, 2000; Stafford, 1996). However, the majority of them highlighted the superiority of the pictorial elements compared to the verbal ones (Childers and Houston, 1984; Mitchell, 1986; Obermiller and Sawyer, 2011; Wedel and Pieters, 2000), and it seems that we are becoming a visual society in which “we're losing our patience with words” (Pierson, 2013).

Yet very few studies were devoted to the effects of recipients' way of processing pictorial advertising stimuli on attitudes. One reason could be that for a long time, pictorial stimuli have generally only been considered to be peripheral

cues in research on print ads' persuasive effectiveness. Nevertheless, previous research demonstrated that some pictorial stimuli may act as strong arguments and be more or less effective depending on the recipients' motivation for processing an ad (Miniard *et al.*, 1991). Typically, when people are motivated and able to think about the content of the message, elaboration is high, whereas when people are not motivated and/or have low capacity to think about message content, elaboration is low (Petty *et al.*, 1987). In the present research, we were interested in how the way pictorial stimuli are processed may be affected by recipients' low capacity for elaboration, typically when individuals are cognitively charged. In real-life situations, consumers have to deal with multifactorial environmental stimuli, which reduce the cognitive resources they can, or want to, allocate when exposed to an ad. It can be particularly true in urban settings where stress is frequently experienced (Moser, 1988) and

because people are frequently exposed to visual and auditory overload (Mousavi *et al.*, 1995). In situations of cognitive overload, individuals' attention is drawn to stimuli other than those in the ad, but pictures are more easily processed than words and consequently could be less impacted by a diminished capacity for elaboration (Holbrook and Moore, 1981).

An additional issue of interest in the present research was the extent to which pictorial stimuli act as distractors when recipients are processing ads' verbal claims. Because of their highly arousing and attention-capturing properties, pictures may negatively impact verbal claim evaluation, thereby reducing the amount of product information taken in (Decrop, 2007). Consequently, the persuasive effectiveness of verbal claims may be dampened or even eliminated when a picture, and more specifically an attractive picture, is present in an ad. In other words, the absence of a pictorial component in a print ad could benefit the persuasiveness of the verbal component.

Theoretical framework

Pictorial claims and information-processing in ad effectiveness

In the traditional view, the way viewers scrutinize ad arguments (the textual element) is linked to systematic processing (i.e. high cognitive elaboration) of the message, whereas the consideration of peripheral factors (e.g. source credibility, number of arguments) is traditionally linked to superficial processing (i.e. low elaboration) of the persuasive message (Perloff, 2010). Generally, strong verbal arguments, which elicit primarily positive cognitive responses (Johnson *et al.*, 2005, p. 624), are the most efficient means of persuading readers to accept the message, on the condition that the readers are able and motivated to process the information. While strong arguments are needed for maximal message impact when viewers engage in systematic processing, weak arguments do not decrease persuasive effectiveness in the case of negligible attention allocated to ad processing (Petty and Cacioppo, 1983). In persuasion research, pictures have often been considered a simple reflection of reality (i.e. copy theory) and efficient mainly in eliciting emotional responses. Consequently, they have regularly been considered as peripheral cues in the persuasive process. However, a pictorial element may actually often be considered a central argument. For instance, pictures of attractive female models in cosmetic product advertising can be a strong argument in the persuasive process (Petty, 1995). The beauty of the models represents the strongest evidence of product efficacy and the potential benefits of buying and using the product.

Miniard *et al.* (1991) demonstrated that pictorial stimuli can be a central argument when conveying product-relevant information. Studying the moderating role of involvement in picture-based persuasion, they demonstrated that product-relevant pictures can act as strong arguments in the persuasive process. As involvement increased, the impact of product-relevant pictures was greater, and the impact of non-relevant pictures decreased. However, no difference was observed in the low involvement condition. For pictures that differed in terms of attractiveness, they demonstrated that as involvement decreased, the impact of the attractive picture

increased whereas the impact of the non-attractive picture decreased. Other research established that visual rhetorical figures were more effective in terms of liking and recall than verbal figures, and this occurred regardless of the processing conditions (McQuarrie and Mick, 2003). Visual figures based persuasion was in all likelihood effective regardless of the processing conditions because rhetorical figures such as tropes or schemes are capable of motivating additional elaboration. In the incidental exposure condition, subjects may have allocated more resources for processing visual figures, leading to a persuasive effect similar to the one observed in the directed processing experimental condition.

Depending on the kind of pictorial element, recipients may engage either in heuristic processing or systematic processing. For instance, nonverbal symbols and metaphors were found to require more elaboration to process (DeRosia, 2008). In this case, a recipient's inability to process the stimulus should negatively affect pictorial persuasive effectiveness. However, pictorial stimuli not requiring a high level of elaboration to be well understood should be processed more automatically and quickly. Thus, they should not be particularly affected by a recipient's diminished processing ability.

The brain processes pictorial information faster than textual information, and pictures generally promote a more holistic and integrative form of processing than do words (Holbrook and Moore, 1981, Liu, 1986, Pomerantz, 1981). The picture-superiority effect on recall and attitudes has been partly explained as resulting from the fact that pictures are more easily processed than words. According to the dual-coding model, both pictorial and verbal stimuli are encoded in a particular way in memory. Pictures are encoded as imaginal codes, and words are encoded as verbal codes. Nevertheless, pictures are labeled more automatically than words are spontaneously imaged (Paivio, 1986, p. 160). As a consequence, processing of pictorial stimuli may not be impaired to the same extent as verbal stimuli (or perhaps not at all) by a low capacity to process information, at least when considering pictorial stimuli that do not require high elaboration to be well understood.

Pictures and verbal claims in ad effectiveness

The interactive effects of verbal and pictorial stimuli in advertising have been widely investigated in communication research, mostly in terms of consistency (Heckler and Childers, 1992; Houston *et al.*, 1987; Jay *et al.*, 2008). In the present study, the purpose was to investigate to what extent a pictorial claim could negatively affect attitudes toward an ad's verbal claims and subsequently impact participants' cognitive and affective responses. To a certain extent, pictures can intrinsically work as a distraction from processing the verbal information. Because of the high capacity of pictures to attract and arouse consumer attention, they may interfere with focus on the verbal claims. Pictorial elements are the primary appeal for print ad viewers, and generally, textual elements are processed by fewer viewers (Franzen, 1994). Therefore, it is likely that negative rather than positive thoughts should be generated in response to verbal claims as well as a less positive attitude toward them in cases of ads with pictures than in cases of ads with no pictures.

Classically, verbal claims are appeals either directed toward affective (i.e. hedonic; value-expressive) or rational benefits (i.e. functional; utilitarian values). According to the match-up hypothesis (or the functional-matching hypothesis), matching the advertising appeal with the product type is the most efficient way of persuading consumers (Choi *et al.*, 2012; Kamins, 1990; Shavitt, 1990). The FCB grid model (Ratchford, 1987) specifies products' category (utilitarian/value-expressive) related to the *think* and *feel* dimensions and includes the involvement dimension (i.e. how relevant, complex and risky a product is judged to be during the purchasing process). People buy think category products because they serve functional needs whereas they buy feel category products because they serve value-expressive needs. Therefore, it is more efficient to use a functional (cognitively based) claim for products serving utilitarian needs and a value-expressive (affectively based) claim for products serving affective and social needs.

In the present research, the effect of a pictorial claim on verbal processing was hypothesized to be moderated according to the content of the verbal claims (rational *vs* affective). Indeed, when a recipient is distracted, he or she will tend to rely on affect rather than cognition and subsequently be more persuaded by affectively based arguments (Batra and Stayman, 1990; Greifeneder *et al.*, 2011). For instance, Shiv and Fedorikhin (1999) have demonstrated that under circumstances of high cognitive load, individuals facing a food choice based their decision on affect rather than cognition. So it was assumed that the presence of a picture, acting as a distractor on verbal claim processing, would negatively affect verbal processing and attitudes only for appeals based on the functional properties of the product/service, and not for advertising appeals directed toward the generation of affective responses.

Overview of the experiments

Our investigation involved two studies. In the first study, the impact of a picture on thoughts and attitudes toward the verbal claims was tested using an attractive picture thought to be an efficient distractor. Recipients' capacity for elaboration was manipulated with a cognitive load and the verbal claims were also manipulated (affective *vs* rational). It was expected that when a picture was present (*vs* absent), participants would generate fewer positive thoughts and more negative thoughts, as well as a less positive attitude toward the functional verbal claim. The reverse was expected when the verbal claim was affectively based. In addition, we tested whether the expected positive effect of an attractive picture on thoughts and attitudes would be moderated when respondents were under a cognitive load. Given the literature, one of two contrasting results was likely to be observed. Because individuals with low opportunity to thoughtfully elaborate on ad content can still encode pictures' complex features (Holbrook and Moore, 1981; Liu, 1986), a first hypothesis is that lower ability to process information will not disrupt pictorial processing. Therefore, the positive effect of an attractive picture on the respondents' attitudes and thoughts generated toward the ad will not be moderated by cognitive load. Based on Miniard *et al.*'s (1991) findings, a competing hypothesis is that a picture, perceived as a strong cue (i.e. eliciting more positive

than negative thoughts), could be less persuasive in cases where individuals have lower capacity for processing information (i.e. under cognitive load). In this condition, participants will generate fewer positive thoughts and more negative thoughts toward the ad and will have a less positive attitude toward the ad.

In a second study, we aimed to investigate whether the persuasive effect of pictures different in terms of attractiveness (attractive *vs* unattractive) would be moderated by cognitive load and whether both would influence the assessment of verbal claims in the same direction. It was hypothesized that participants under a cognitive load would have a more favorable attitude toward the ad and the product, as well as a higher purchase intention, when exposed to the attractive picture (*vs* unattractive) thought to elicit more positive affective responses. Additionally, it was hypothesized that the attractive picture would act as a stronger distractor than the unattractive one, leading to a less positive attitude toward the verbal claim but only when the verbal claim was rationally based. The reverse findings were expected for the affectively based verbal claim.

Experiment 1

Method

Participants and design

A $2 \times 2 \times 2$ between-subjects factorial design was used, with pictorial claim (present *vs* absent), verbal claim (functional *vs* hedonic) and cognitive load (cognitive load *vs* no cognitive load) as independent variables. One hundred sixty undergraduate students (Females = 99; Males = 61; mean age = 21.45 years) participated without receiving incentives for the experiment and were randomly assigned to one of the experimental conditions.

Print advertisement material

Participants were shown an ad printed on photo paper (A4 format) for a fictitious airline named *Airfly*. For the attractive picture, a tropical beach scene was used as a background. Two verbal claims, with an equal number of words, were created, pretested and validated [1]. The functional verbal appeal (i.e. rational appeal) claimed: "1023 euros for a two-way ticket; departure from Paris and country towns". In France, a two-way ticket to the Seychelles at €1,023 is rather inexpensive. The hedonic verbal appeal (i.e. affective appeal) claimed: "A relaxing escape, paradise has never been so close".

Cognitive load task

Before ad exposure, the participants were exposed to several complex codes (e.g. "29qH13FQm") with the justification that such codes could be used in the future for efficient flight reservations on the internet. In the cognitive load condition, participants were asked to remember a code and were warned that they would be tested at the end of the experiment.

Measurement of the dependent variables

Thought-listing task. After viewing the ad, the participants were asked to provide the random thoughts that came to mind as they viewed the ad (Brock, 1967). The coding procedure

consisted of two phases. In the first phase, thoughts were classified according to five categories: thoughts about the ad (A_{thoughts}), about the brand (B_{thoughts}), about the verbal arguments (A_{thoughts}), about the pictorial/background stimulus (B_{thoughts}), or about something else (O_{thoughts}). In the second phase, each of the five categories was also divided into three categories: positive thoughts, negative thoughts and neutral thoughts. This classification was administered by two independent judges (average mean inter-judges reliability of 0.84), and the final results were based on consensual decisions.

Attitudinal measures. Attitudes toward the verbal claim (A_{verbal}) and the ad (A_{ad}) were measured on seven-point Likert scales from 1 “strongly disagree” to 7 “strongly agree” (see Table I). Furthermore, participants were asked to rate whether they thought the prices proposed by the company were attractive (1 “not attractive at all” to 7 “very attractive”).

Control and manipulation check items. At the end of the questionnaire, participants’ assessments of ads’ similarity and understandability were collected. Finally, they were asked to retrieve the correct code among four codes (plus a tick box for the possibility of answering “none of these codes” to minimize fortuitous answers). A correct answer was coded “1” and a wrong answer “0”.

Results

Control and manipulation checks

On average, the print advertisements were judged rather similar to other ads for airlines, with a mean of $M = 4.25$ ($SD = 2.02$), and judged as understandable, with a mean of $M = 5.50$ ($SD = 1.64$). The ANOVAs performed with Verbal claim \times Pictorial claim (hereafter abbreviated as “Picture”) \times Cognitive Load as independent variables indicated a significant main effect of Picture on similarity assessment. Ads with the picture were judged more similar ($M = 5.6$) to other ads for airlines than ads with no picture ($M = 3$), $F(1, 152) = 80.17, p < 0.0001$. The similarity data were integrated as a covariate. There was a significant main effect of cognitive load, $F(1, 152) = 37.15, p < 0.0001$, showing that the code was better recalled when the participants were asked to memorize it ($M = 0.92$ vs $M = 0.46$). A t -test revealed that participants exposed to ads containing the attractive picture generated more positive thoughts ($M = 0.47$) toward the pictorial element than negative thoughts ($M = 0.24$), $t(79) = 1.95, p < 0.05$.

Table I Internal consistency of the dependent measures—Study 1 and Study 2

| Measures | Items | Study 1 | | Study 2 | |
|--------------------------------|---|----------|-------------------------------|----------|-------------------------------|
| | | α | Means inter-item correlations | α | Means inter-item correlations |
| A_{ad} | Attractive, boring, convincing, interesting | 0.78 | 0.48 | 0.70 | 0.38 |
| $A_{\text{verbal claim}}$ | Useful, attractive, original, meaningless | 0.71 | 0.43 | 0.70 | 0.42 |
| $A_{\text{pictorial claim}}$ | Useful, attractive, original, meaningless | | | 0.79 | 0.47 |
| Product assessment | Deliver its promise; efficient for removing limescale; efficient for preventing cavities; efficient for whitening teeth | | | 0.82 | 0.63 |
| Picture-text congruency | similar; conveying the same message | | | 0.72 | 0.47 |

Recipients’ cognitive responses

ANCOVAs with Picture \times Verbal Claim \times Cognitive Load as categorical factors and “ad similarity” as a covariate were performed.

Thoughts toward the verbal claims

More negative thoughts toward the verbal claims were generated when the picture was present ($M_s = 0.25$ vs 0.08), $F(1, 151) = 4.67, p < 0.04$, and more positive thoughts were generated when the picture was absent ($M_s = 0.37$ vs 0.27), $F(1, 151) = 3.73, p < 0.06$. No significant Picture \times Verbal Claim interaction effect was observed, and thus the hypothesis that the impact of the pictorial stimulus on recipients’ thoughts would be moderated by the kind of verbal claim (rational vs affective) was not supported.

Regarding ads with the picture, a t -test analysis revealed that participants not under cognitive load generated more thoughts about the verbal claims ($M_{\text{Total verbal thoughts}} = 0.86$) than about the picture ($M_{\text{Total picture thoughts}} = 0.56$); $t = 2.06, p < 0.04$. This difference was not significant when participants were cognitively loaded; $M_{\text{Total verbal thoughts}} = 0.75$ and $M_{\text{Total picture thoughts}} = 0.56$; $t = 1.48, p = 0.13$.

Thoughts toward the ad

Neither the main effect of Picture nor the Picture \times Cognitive Load effect were significant, $p > 0.10$.

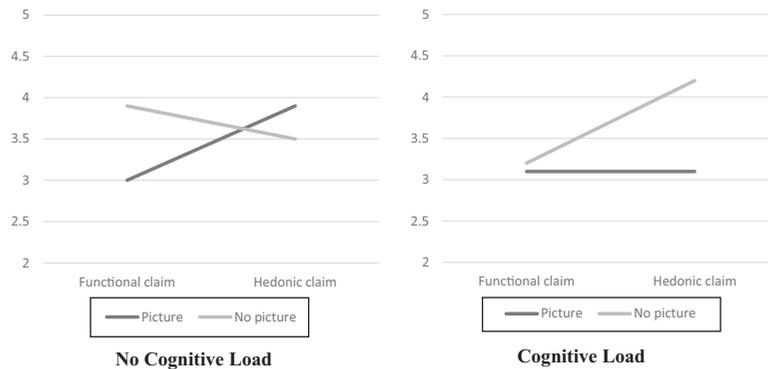
Recipients’ attitudinal responses

Attitude toward the verbal claim. A significant Picture \times Verbal Claim \times Cognitive Load interaction effect was observed on A_{verbal} , $F(1, 151) = 4.76; p < 0.03, \eta^2 = 0.04$. When not under cognitive load, participants had a more favorable attitude toward the functional verbal claim when the picture was absent ($M = 3.9$) rather than present ($M = 3$); post hoc, $p < 0.06$. Under cognitive load, this difference was not significant; $M_s = 3.1$ and $3.2, p > 0.09$. When cognitively loaded, participants had a more favorable attitude toward the hedonic verbal claim when the picture was absent ($M = 4.2$) rather than present ($M = 3.1$); post hoc, $p < 0.05$. When not under cognitive load, this difference was not significant; $M_s = 3.5$ and $3.9, p > 0.09$ (Figure 1).

Attitude toward the ad. A main effect for Picture showed that the ad was judged more attractive when the picture was present ($M = 5.10$) rather than absent ($M = 3.30$); $F(1, 151) = 9.45, p < 0.003, \eta^2 = 0.08$. No significant Picture \times Cognitive Load interaction was observed, $p > 0.10$.

A significant Picture \times Verbal Claim two-way interaction ($F(1, 151) = 5.51, p < 0.03, \eta^2 = 0.05$) indicated that ads

Figure 1 Attitude toward the verbal claims in response to the pictorial, the verbal and the cognitive load manipulation – Study 1



with the picture were judged more convincing when the verbal claim was hedonic-centered ($M = 4.33$) rather than functional-centered ($M = 3.32$), post hoc, $p < 0.03$. Furthermore, the ad was judged more convincing with the hedonic-centered claim when the picture was present ($M = 4.33$) rather than absent ($M = 3.28$), post hoc, $p < 0.02$, whereas the opposite was observed with the functional-centered claim ($M_s = 3.32$ and 3.74), but the difference was not significant, $p > 0.05$.

Using Preacher and Hayes' (2008) macro process, the influence of Picture on attitude toward the ad mediated by the attitude toward the verbal claim was tested and revealed a complementary mediational effect (direct and indirect effects are significant) with a significant index of moderated mediation [index = -1.4133 ; IC = -2.5856 ; -0.4194], which means that the effect of Picture on attitude toward the

verbal claims was moderated by the verbal and cognitive load manipulation (Table II). More precisely, conditional indirect effects were significant for participants who were cognitively loaded and exposed to the hedonic claim (index = -0.6133 ; IC = -1.1633 ; -0.1141) and for participants not cognitively loaded and exposed to the functional claim (index = -0.4906 ; IC = -1.0482 ; -0.0076) (Figure 2).

Evaluation of price attractiveness

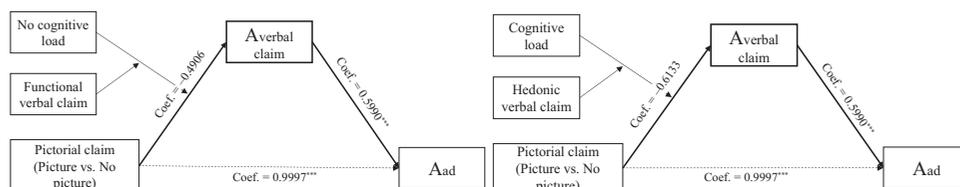
A significant Picture \times Verbal Claim \times Cognitive Load three-way interaction was observed, $F(1, 143) = 5.02$, $p < 0.03$, $\eta^2 = 0.06$. Whatever their ability to process information, participants judged the prices as fairly attractive regardless of the presence or the absence of the picture when the verbal claim was functionally based (total mean of, $M = 4.34$). However, when the verbal claim was hedonically based,

Table II Influence of picture (Attractive vs No picture) on A_{ad} mediated by $A_{verbal\ claim}$ – Study 1

| Independent variables effects | Attitude toward the ad (Y) | | | Attitude toward the verbal claim (M) | | |
|--|----------------------------|-----|--------------------|--------------------------------------|----|--------------------|
| | Coefficient | p | IC | Coefficient | p | IC |
| Picture direct effect | 0.9997 | *** | [0.6335; 1.3659] | -0.8190 | NS | [-1.6904; 0.0523] |
| Cognitive load direct effect | | | | -0.7238 | NS | [-1.5951; 0.1475] |
| Verbal claim direct effect | | | | -0.3667 | NS | [-1.2380; 0.5047] |
| P \times CC \times V direct effect | | | | -2.3593 | ** | [-4.1329; -0.5857] |
| $A_{verbal\ claim}$ effect | 0.5990 | *** | [0.4699; 0.7282] | | | |
| Conditional indirect effects | | | | | | |
| F – No CC | -0.4906 | | [-1.0482; -0.0076] | | | |
| H – No CC | 0.2381 | NS | [-0.3461; 0.8826] | | | |
| F – CC | 0.0713 | NS | [-0.4372; 0.5135] | | | |
| H – CC | -0.6133 | | [-1.1633; -0.1141] | | | |

Notes: F = Functional claim (coded as 0); H = Hedonic claim (coded as 1); No CC = no cognitive load (coded as 0); CC = cognitive load (coded as 1); Picture (no-picture coded as 0 and attractive picture coded as 1); *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; NS = $p > 0.10$. IC is significant when the 0 is excluded of it

Figure 2 Significant conditional indirect effects of Picture on A_{ad} mediated by the $A_{verbal\ claim}$ – Study 1



participants assessed the airline's prices as more attractive under high cognitive load when the picture was absent ($M = 4.76$) rather than present ($M = 3.53$), whereas prices were judged more attractive under no cognitive load when the picture was present ($M = 4.53$) rather than absent ($M = 3.76$), post hoc, $p < 0.05$ (Figure 3).

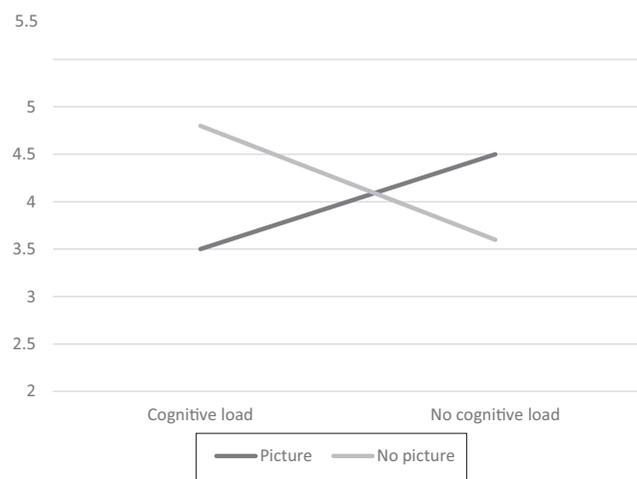
Discussion

In this first study, findings favored the hypothesis that cognitive load has little impact on the elaboration of the pictorial claim. When participants had fewer resources to engage in the evaluative process, only elaboration toward the verbal claims (not toward the pictorial claim) was impacted, with a decrease of the number of thoughts generated toward them. Consistently, disruption in elaboration did not moderate pictorial influence on thoughts and attitude toward the ad. However, when participants had to make inferences about price attractiveness (i.e. hedonic verbal claim condition), recipients under cognitive load judged the price less attractive when the picture was present rather than absent whereas the reverse was observed in the no cognitive load condition.

As expected, the presence of a picture negatively impacted attitudes toward verbal claims. More negative thoughts toward the verbal claims were generated when the picture was present in the ad, whereas more positive thoughts were expressed when the picture was absent. These findings were confirmed on the A_{verbal} measure but moderated by the recipients' ability to process information. When fully able to elaborate on the message, the presence of the picture elicited unfavorable attitudes toward the functional verbal claim, which mediated the influence of the picture on A_{ad} . By contrast, under a cognitive load, the presence of the picture elicited an unfavorable attitude toward the hedonic verbal claim, which mediated the influence of the picture on A_{ad} .

A second study was conducted to validate these first findings and further investigate the influence of pictorial stimuli qualified as unattractive. The service advertised in the 1st study, promoting holidays for the Seychelles, was rather experientially based, leading to a preference for an affectively

Figure 3 Attractiveness of the air company prices in response to the pictorial condition and the cognitive load manipulation within the verbal hedonic-centered condition – Study 1



based appeal, which is congruent with the match-up hypothesis (Choi *et al.*, 2012). So in the second study we tested a product that would not typically involve only one kind of advertising appeal. In addition, because the picture was positioned on the back of the text, potentially lowering its readability, the verbal ad's content was separated from the picture to overcome this issue.

Experiment 2

Study 2 was conducted with the objective of confirming the first study's findings and also of investigating the extent to which they were also observed when considering an unattractive picture. A toothpaste product (familiar and frequently used) was tested. Located in the center of the FCB matrix model (Ratchford, 1987), both utilitarian and value-expressive appeals are appropriate for this product. In addition, as a moderately involving product, it allows the avoidance of information processing confounding effects. The same cognitive load task was used.

Method

Participants and design

A total of 370 undergraduate students (50.1 per cent female; mean age = 20 years) completed the study on a computer screen without receiving incentives. Participants were randomly assigned to one of the 12 conditions in a 3 (Picture: No picture, Smile-picture, Product-picture) \times 2 (Text: Value-expressive, Functional) \times 2 (Cognitive load: Present, Absent) between-subjects design.

Print advertisement material

For ecological validity purposes, a product picture of a real Swiss toothpaste, mostly unknown in France, was chosen to be the unattractive picture. For the attractive picture, a woman's mouth smiling and showing nice white teeth was chosen [2]. The functional verbal appeal claimed: "Remove limescale and prevent cavities from developing", and the value expressive appeal claimed: "Guaranteed brightness, your teeth smile again". Two slogans were held constant across each ad. Above the picture the brand name was placed, followed by the slogan: "beauty of the teeth, simply". Under the picture was another slogan: "The toothpaste recommended by oral health professionals".

Measures

In addition to the same attitudinal (A_{verbal} and A_{ad}) measures, attitude toward the picture, product evaluation (Table I), purchase intention ("Would you consider buying this toothpaste?"), and an open-ended item on the estimated price of the toothpaste (given a price range between €2 and 12) were collected. As control measures, the congruence of the ad appeal with the type of product advertised, the picture-text congruence, knowledge of the brand, and oral health care were measured.

Results

Control and manipulation checks

ANOVAs performed with Picture \times Verbal Claim \times Cognitive Load independent factors showed a better recall of the code when participants were in the cognitive load condition ($M_s = 0.89$ vs 0.08 ; $F(1, 353) = 56.5$, $p < 0.00001$). The smile-picture

claim was judged more appropriate for a toothpaste advertisement ($M = 5.4$) than the product-picture ($M = 4.4$) or no-picture ($M = 3.1$), and the product-picture appeal was also judged more congruent than no-picture; post hoc, $p < 0.0001$. As a trend, a Verbal Claim \times Picture effect indicated that the Smile-picture/Value-expressive text combination was judged more congruent than the other ones ($M_{Smile-Value-expressive} = 5$; $M_{Smile-Functional} = 4.4$; $M_{Product-Functional} = 3.8$; $M_{Product-Value-expressive} = 3.8$; post hoc, $p < 0.01$); $F(1, 241) = 3.31, p < 0.08$. In all, 17 participants who were familiar with the brand advertised were removed.

A_{verbal}

ANCOVAs with Picture \times Verbal Claim \times Cognitive Load categorical factors and “product-ad appeal congruence” and “caring for oral health” as covariates indicated a significant three-way interaction, $F(2, 339) = 3.1, p < 0.05, \eta^2 = 0.03$. When participants were not cognitively loaded, they expressed a more positive attitude toward the functional text when there was no picture ($M = 2.4$) or the product-picture ($M = 2.6$) than the smile-picture ($M = 1.9$), post hoc, $p < 0.04$ (see Figure 4).

A_{ad}

A main effect of picture was observed, $F(2, 339) = 12.7, p < 0.00001, \eta^2 = 0.08$. Participants had a more positive attitude toward the ad when the smile-picture was present ($M = 3.5$) rather than when the product-picture was present ($M = 3.1$) or when there was no picture in the ad ($M = 2.8$); post hoc, $p < 0.001$. The ad was more positively evaluated when the product-picture was present compared to the no picture condition, post hoc, $p < 0.05$. A Picture \times Verbal Claim effect indicated that when the verbal claim was value-expressive, the ad with the smile-picture was more positively evaluated ($M = 3.7$) than the one with the product-picture ($M = 3$) or the one with no picture ($M = 2.8$); $F(2, 339) = 3.86, p < 0.03$; post hoc, $p < 0.00001$.

The influence of the type of picture (attractive vs unattractive) on attitude toward the ad mediated by the attitude toward the verbal claim was tested and revealed a complementary mediational effect with a significant index of moderated mediation (index = -0.5659 ; IC = -1.0415 ; -0.1654) (Table III). More precisely, the conditional indirect effect was significant for participants not cognitively loaded and exposed to the functional claim (conditional indirect

effect [index = -0.2911 ; -0.5456 ; -0.0935]; Figure 5). The influence of the attractive picture (coded 1) versus no picture (coded 0) on attitude toward the ad mediated by the attitude toward the verbal claim showed a complementary mediational effect (direct effect = [index = 0.6874 ; IC = 0.4702 ; 0.9045]; indirect effect [index = -0.1273 ; IC = -0.2635 ; -0.0297]; Sobel test; $Z = 2.28 > 1,196, p < 0.03$), see Figure 6.

Product evaluation

A Picture \times Cognitive Load effect was observed with participants not cognitively loaded declaring a less positive attitude toward the product when the smile-picture was present ($M = 3.2$) in comparison to the no picture condition ($M = 3.7$), $F(2, 339) = 4.8, p < 0.009, \eta^2 = 0.03$; post hoc, $p < 0.04$. As a trend, the reverse was observed under a cognitive load, $M_s = 3.5$ and 3.1 ; post hoc, $p < 0.07$.

Purchase intention

A Picture \times Cognitive Load effect was observed with participants not cognitively loaded declaring a lower purchase intention when the smile-picture was present ($M = 2.2$) in comparison to the no picture condition ($M = 2.6$), $F(2, 339) = 4.3, p < 0.02, \eta^2 = 0.03$; post hoc, $p < 0.04$. The reverse was observed when participants were cognitively loaded, $M_s = 2.8$ and 2 ; post hoc, $p < 0.06$ (Figure 7).

Product price estimation

A Picture \times Verbal Claim \times Cognitive Load effect, $F(2, 339) = 3.3, p < 0.04, \eta^2 = 0.02$, was observed (see Figure 8). When participants were not cognitively loaded and the verbal claim was functional, the product’s price estimation was lower for the smile-picture ($M = \text{€}3.9$) than for the product-picture ($M = \text{€}5.1$) or no picture ($M = \text{€}5$); post hoc, $p < 0.02$. Conversely, participants under cognitive load estimated the product price as higher when exposed to the smile-picture ($M = \text{€}5.4$) than when exposed to the product-picture ($M = \text{€}3.8$), post hoc, $p < 0.0008$. When cognitively loaded, participants exposed to the smile-picture estimated the price of the product higher when the verbal claim was functional ($M = \text{€}5.4$) rather than value-expressive ($M = \text{€}4.4$), post hoc, $p < 0.03$.

Discussion

Study 2 replicated Study 1’s findings. In comparison to the unattractive picture or no picture, the attractive picture had a

Figure 4 Attitude toward the verbal claims in response to the pictorial, the verbal and the cognitive load manipulation – Study 2

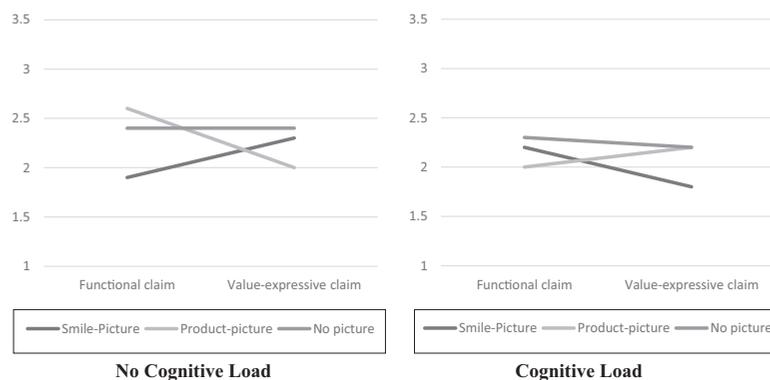


Table III Influence of picture (attractive vs unattractive) on A_{ad} mediated by $A_{verbal\ claim}$ – Study 2

| Independent variables effects | Attitude toward the ad (Y) | | | Attitude toward the verbal claim (M) | | |
|-------------------------------------|----------------------------|----------|--------------------|--------------------------------------|----------|--------------------|
| | Coefficient | <i>p</i> | IC | Coefficient | <i>p</i> | IC |
| Picture Direct effect | 0.4122 | ** | [0.1889; 0.6354] | -0.8478 | ** | [-1.4288; -0.2667] |
| Cognitive load Direct effect | | | | -0.6803 | * | [-1.2891; -0.0715] |
| Verbal claim Direct effect | | | | -0.7188 | * | [-1.3154; -0.1221] |
| $P \times CC \times V$ | | | | -1.6480 | ** | [-2.8388; -0.4573] |
| Direct effect | | | | | | |
| $A_{verbal\ claim}$ effect | 0.3434 | *** | [0.2492; 0.4375] | | | |
| Conditional indirect effects | | | | | | |
| F – No CC | -0.2911 | | [-0.5456; -0.0935] | | | |
| V – E – No CC | 0.0886 | NS | [-0.1516; 0.3452] | | | |
| F – CC | 0.0311 | NS | [-0.1618; 0.2243] | | | |
| V – E – CC | -0.1551 | NS | [-0.3418; 0.0064] | | | |

Notes: F = Functional claim (coded as 0); V-E = Value-expressive claim (coded as 1); No CC = no cognitive load (coded as 0); CC = cognitive load (coded as 1); Picture (unattractive picture coded as 0 and attractive picture coded as 1); *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; NS = $p > 0.10$; IC is significant when the 0 is excluded of it

Figure 5 Significant conditional indirect effect of Picture (Attractive vs Unattractive) on A_{ad} mediated by the $A_{verbal\ claim}$ – Study 2

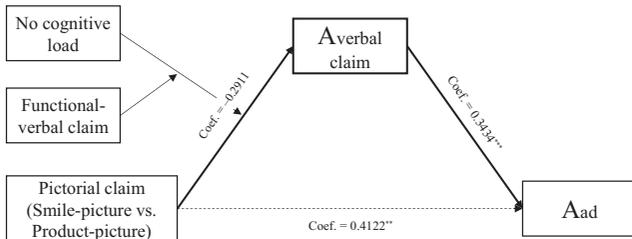
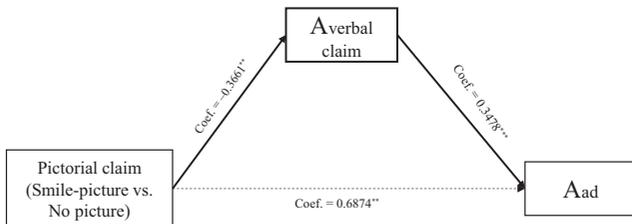


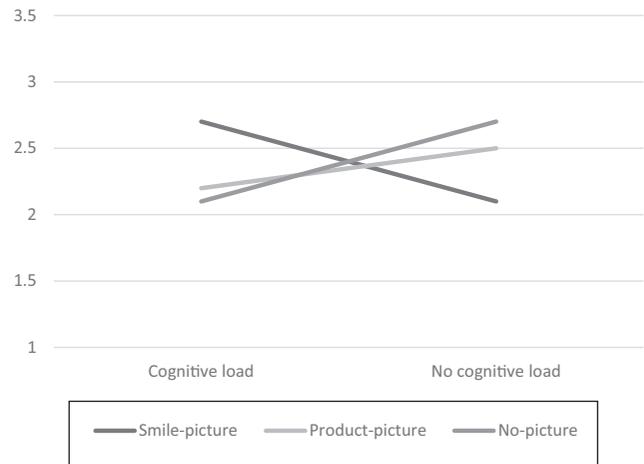
Figure 6 Complementary mediational effect of Picture (Attractive vs No picture) on A_{ad} mediated by the $A_{verbal\ claim}$ – Study 2



negative effect on attitude toward the functional verbal claim when recipients were fully able to elaborate on ad content. Again, mediational analyses demonstrated that attitude toward the functional claim was a mediator of the attitude toward the ad.

Contrary to our expectations, participants under cognitive load did not express a more positive attitude toward the ad or the product, or higher purchase intention, when exposed to the attractive picture rather than the unattractive picture. But these effects were observed on purchase intention and as a trend on product evaluation when comparing the attractive-picture condition to the no-picture condition, with a higher purchase intention and a better product evaluation when participants who were under cognitive load were exposed to the attractive-picture. The reverse result was observed under no cognitive load.

Figure 7 Purchase intention in response to the pictorial and the cognitive load manipulation – Study 2



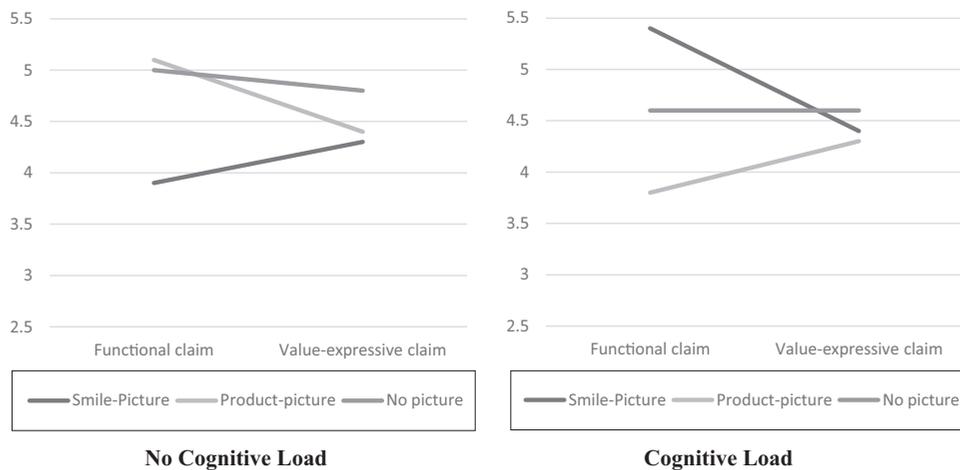
Finally, the recipients' capacity for elaboration moderated the impact of the type of picture (attractive vs unattractive) on product price estimation, but mainly when the verbal claim was functionally based. In this case, the presence of the attractive picture lowered the estimated price when participants could process information whereas it heightened the estimation when information processing was disrupted by a cognitive load. The reverse was observed with the unattractive picture.

General discussion

The present study had two main objectives. The first objective was to further explore whether the persuasive impact of a picture in a print ad would be moderated when recipients have low capacity to fully elaborate on information. The second objective was to test whether an attractive pictorial claim could negatively affect the verbal claims' evaluation.

In two experiments, results demonstrated that participants fully able to elaborate on ad content expressed a less positive

Figure 8 Product price estimation (€) in response to the pictorial, the verbal and the cognitive load manipulation – Study 2



attitude toward functional verbal claims when an attractive picture was present. Furthermore, the negative attitude toward the functional verbal claim mediated the influence of the attractive picture on A_{ad} when participants were not cognitively loaded. The unattractive picture showed no similar effect, which supports the assumption that high attention-getting pictures such as attractive ones are stronger distractors of recipients' verbal claim processing. It must be noted that the verbal content had no effect on attitudes toward the pictorial claim. This corroborates the fact that pictures are the primary appeal for ad viewers (Franzen, 1994).

One issue was whether the presence of the attractive picture reduced recipients' ability to process the functional verbal claim, or whether they had experienced a subjective difficulty when processing information (i.e. disfluency). Subjective processing fluency is a predictor of attitude toward the ad and purchase intention (Storme *et al.*, 2015) and may affect the processing of both verbal and pictorial ad content (Kergoat and Meyer, 2015). Findings on thoughts in study 1 did not indicate a decrease in the number of thoughts generated toward the verbal claim when the attractive picture was present, but an effect on the valence of the thoughts. This favors a fluency effect rather than disruption of cognitive processing of the verbal claim.

Study 1 provided evidence for a negative influence of an attractive picture on attitude toward the hedonic-verbal claim in the cognitive load condition, but this result was not replicated in Study 2. One explanation may be that the attractive picture, as an affectively based cue, was considered as a stronger persuasive cue in Study 1 because it was highly relevant to the experiential nature of the service advertised (i.e. a trip to the Seychelles). Consistent with Miniard *et al.*'s findings (1991), the persuasiveness of the relevant picture was dampened when participants had fewer resources to allocate for processing information. This effect was also observed in Study 1 when participants had to infer price attractiveness (i.e. hedonic-verbal claim condition). Here again, because no price information was given in the text, pictorial information was a critical cue to rely on when forming judgments and consequently was affected by the presence of a cognitive load. When salient, pictorial information may have a

disproportionate influence on inferences about missing information in comparison to words (Taylor and Thompson, 1982).

In Study 2, the attractive picture was considered a peripheral cue within the persuasive process. When present, participants under cognitive load had a more favorable product assessment and higher purchase intention in comparison to the no picture condition. The reverse was observed when they were not under cognitive load. With respect to previous work (Greifeneder *et al.*, 2011; Shiv and Fedorikhin, 1999), cognitive load induced more positive responses when recipients were exposed to the pictorial affectively based cue (i.e. attractive picture). Contrasting results were observed with the unattractive picture when participants had to infer the product price. When the ad contained the product picture, participants exposed to the ad with the functional claim estimated lower prices when they were cognitively loaded than when they were not. The reverse was observed with the attractive picture. It is likely that the product-picture was perceived as a more relevant cue than the smile-picture for the topic under consideration. The picture of the product provided information on the product itself and its packaging design. For that matter, cognitive load (vs no cognitive load) dampened the product price estimation when the picture was a stronger cue (i.e. high relevancy – product-picture), and heightened it when it was a weaker cue (i.e. low relevancy – smile-picture).

The present research provided meaningful findings that highlight the necessity of research on the role of pictures in the persuasive effectiveness of advertising. Future studies must consider a large range of pictorial stimuli. For instance, complex pictures such as metaphors, which require a high level of elaboration (DeRosia, 2008), should be more affected by a reduced opportunity to process information. One of the challenges is to capture the polysemy of pictorial stimuli, which cannot be solely qualified in terms of attractiveness or relevancy. A picture's classification is a rough simplification that certainly does not allow for properly evaluating the complex nature of images (Scott, 1994). As a matter of fact, the product-picture claim in study 2 was qualified as

“unattractive,” but could have been qualified as “functional,” too (vs “hedonic” for the smile-picture claim). Future research on different forms of “attractive” and “unattractive” pictures must be conducted to support the present findings.

Additionally, picture-based persuasion investigation is required to fully integrate the type of verbal claims the pictures are associated with. Copy can help for explaining complex image ads (Phillips, 2000), and pictures may help in understanding unclear verbal claims. Picture-text congruence was shown to positively affect product attitude via processing fluency (Van Rompay *et al.*, 2010). Surprisingly, participants in study 2 did not make a distinction in terms of picture-text congruence regardless of the kind of verbal claims and pictures they were exposed to. Maybe that was because the product advertised, as indicated by the FCB model, was likely to be advertised with functional or affective appeals. Future research must consider a varied sample of products/services advertised.

Theoretical contributions and practical implications

On the theoretical side, the present study presents a critical contribution to the field of research on the persuasive role of pictorial claims in advertising. First, it confirms previous work and provides strong evidence that pictorial claims may act as peripheral or central cues in the persuasive process, and that their effectiveness may be moderated by recipients' ability to process information. Second, to our knowledge, no research has previously brought to light that a pictorial cue may dampen attitudes toward the verbal ad's content. We were able to show that an attractive picture may damage rationally based verbal processing when recipients are fully able to elaborate on an ad's content, and that it mediated the influence of the picture on attitudes toward the ad. Further research should investigate to what extent processing fluency is a mediator of this effect, too.

In terms of recommendations for art directors working in collaboration with designers and copywriters, it confirms the necessity to pay attention to the pictorial and the verbal argumentation depending on the media of communication and the advertising strategy defined by marketers. Recipients reading magazines have higher opportunity to elaborate on print ads (Gnepa, 1993; Yi, 1990) than when exposed to print outdoor campaigns or banner ads when surfing the internet. For instance, advertisements for beauty or skin care creams in magazines are variously presented with a picture of an attractive model, or with a picture of the product itself. Based on the present findings, it is likely that ads with the product picture, or no picture at all, will be more persuasive than ads with a picture of an attractive model. This non-attractive-pictorial-based strategy may also be more relevant for high-image brands based on a skimming pricing strategy, which aims to communicate regarding the functional properties of their product. Conversely, it may be inadvisable for a marketer to promote a product's properties with a product picture on banner ads included within non-product-related websites, unless of a penetration pricing strategy objective.

The present study strongly supports the view that research must widely investigate pictorial persuasiveness under the rubric of information processing level to develop a robust theoretical framework on picture-based persuasion. This opens the way to future exciting research.

Notes

- 1 A pretest performed on 51 participants ($M = 28$, $F = 23$, $M_{\text{age}} = 19$; $SD = 1.35$) with seven-point Likert scales from 1 “strongly disagree” to 7 “strongly agree” indicated the chosen picture to be fairly attractive ($M = 5.44$; $SD = 1.74$) and appropriate ($M = 5.45$; $SD = 1.71$) for an airline advertisement. Regarding the verbal claims, *t*-tests indicated that the hedonic verbal claim was evaluated as more affectively based than the functional verbal claim ($M_{\text{Hedonic claim}} = 5.7$; $M_{\text{Functional claim}} = 1.7$; $t = 13.5$, $p < 0.0001$); and the functional claim was judged as more rationally based than the hedonic claim ($M_{\text{Hedonic claim}} = 1.8$; $M_{\text{Functional claim}} = 5.7$; $t = -10.9$, $p < 0.0001$).
- 2 A pretest performed on 56 participants ($M = 29$, $F = 27$, $M_{\text{age}} = 20.1$; $SD = 1.65$) with seven-point Likert scales from 1 “strongly disagree” to 7 “strongly agree” indicated that the smiling-picture was attractive ($M = 4.2$), and to a greater extent than the product-picture ($M = 2.7$), $F(1, 55) = 34.5$, $p < 0.00001$, but both were equally rated as fairly appropriate ($M_s = 5.2$ and 4.7) for a toothpaste advertisement. Regarding the verbal claims, *t*-tests indicated that the value-expressive claim was evaluated as more affectively based ($M_{\text{Value-expressive claim}} = 5.9$; $M_{\text{Functional claim}} = 1.9$; $Z = 6.3$, $p < 0.0001$); and the functional claim was judged as more rationally based ($M_{\text{Value-expressive claim}} = 2.7$; $M_{\text{Functional claim}} = 6$; $t = -13.5$, $p < 0.0001$).

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