

# The effect of print product presentation on consumer's responses through mental imagery

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## Abstract

This paper explores the effectiveness of a specific choice of iconic and verbal stimuli within print advertising to evoke mental imagery. This research aims to further investigate how the evoked imagery influences positive emotions and attitude towards both the advertisement and the brand. We explore how these positive emotions mediate the relationship between mental imagery and subsequent attitudinal responses. Experimental design is employed to examine the effects of imagery-evoking strategies among 340 university students. Structural equation modelling along with the ANOVA and Sobel's test were used in order to investigate the proposed hypotheses. The study's findings indicated that the most effective combination involves an ad containing a staged product image and textual content included instructions to imagine. This combination led to a significant enhancement across all three dimensions of mental imagery: quantity, vividness and elaboration. The findings supported the significant influence of mental imagery in engendering positive emotions and generating favorable attitudes towards the advertised products. Furthermore, the study revealed that positive emotions mediate the relationship between mental imagery and attitude.

**Keywords:** mental imagery, product presentation, advertising, positive emotion, attitude

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## 1. Introduction

Frequently, consumers encounter uncertainties surrounding purchase outcomes, especially when actual product trial is impossible. Previous research has shown that when consumers face a decision making situation with several options to choose from, they engage in mental imagery to simulate future consumption scenarios, which help them to make better choices (Argyriou, 2012; Heller *and al.*, 2019; Kim *and al.*, 2021). This cognitive simulation occurs when consumers mentally visualize or imagine scenes, products, or experiences (MacInnis and Price, 1987; Lutz and Lutz, 1978).

Mental imagery plays an important role in consumer purchase decision. Research over the past decades has shown that mental imagery has many of the same characteristics as a real experience (Kim *and al.*, 2021). Moreover, mental imagery has a powerful impact to elicit cognitive, emotional, and behavioral responses from consumers (Babin and Burns, 1997; Fennis *and al.*, 2011; Yoo and Kim, 2014; Ha *and al.*, 2019). Further, mental imagery has been shown to be an effective means of altering judgments and behaviors in a variety of domain likewise advertising, physical retail, online shopping, and social network (Babin and Burns, 1997; Yoo and Kim, 2014; Ha *and al.*, 2019; Lee and Shin, 2019; Wu *and al.*, 2020).

This research seeks to contribute to the existing literature on consumer experience with mental imagery in traditional media (MacInnis and Price, 1987; Bone and Ellen, 1992; Burns *and al.*, 1993; Unnava *and al.*, 1996; Miller *and al.*, 2000; Fennis *and al.*, 2011). Despite the recent rise of online advertising, offline advertising, particularly print media, has demonstrated its effectiveness in brand building. This is achieved by enhancing brand awareness, consideration, and liking, because of its better executional and placement opportunities (Bayer *and al.*, 2020; De Vries *and al.*, 2017).

Today, marketers are confronted with the challenge of crafting advertising that effectively stimulate imagery processing and produce a persuasive effect. The effectiveness of communication depends on the combined choice of a specific textual and pictorial stimulus (Babin and Burns, 1997; Walters *and al.*, 2007; Fennis *and al.*, 2012;

Kim *and al.*, 2021). The design of the advertising message is relevant to enhance consumers' desire for depicted products.

With the aim to provide insights into the antecedents and consequences of mental imagery, we focus on three constructs: the imagery eliciting stimuli, the imagery construct that mediates the effect of advertising tactics, and the consequences of induced visualization. By doing so, we aim to enrich current comprehension regarding consumer experiences of mental imagery in the context of print advertising. The results provide a better understanding of the factors that have the potential to make advertisements more appealing, thereby improving the broader applicability of the previous findings.

While several elements have been identified in previous research, we are discussing two imagery-evoking strategies that have never been studied in the context of print ads. The first purpose of this study was to determine the effects of iconic and verbal stimuli presented in print advertising for evoking mental imagery. Specifically, we examine two types of product presentation: iconic presentation (product image with or without a human image) and verbal presentation (textual content with or without imagery instructions).

The second purpose of this research is to investigate how evoked imagery influences positive emotions and attitude towards both the advertisement and the brand. While there's often an assumed association between imagery and emotion, empirical evidence supporting this link is limited. Furthermore, the role of positive emotions as a mediator between mental imagery and consumer's attitudes has received relatively little attention.

Hence, our research aims to address the following question: What is the role of mental imagery evoked by a print ad in shaping consumer's emotional and attitudinal responses? Additionally, how do these positive emotions mediate the relationship between mental imagery and subsequent attitudinal responses?

This paper is then structured as follows. In the first section, the concept of mental imagery developed in the literature is reviewed and the research hypotheses are formulated. In the second section, a description of the research methodology and results of the empirical study are provided. We conclude, in the third section, by discussing the specific contributions of this research and presenting future directions in this area.

## 2. Literature review and conceptual framework

### 2.1 Mental imagery: definition and dimensions

Lutz and Lutz (1978) have defined mental imagery as a mental event involving visualization of a concept or relationship. MacInnis and Price (1987) describe mental imagery as a process by which sensory information is represented in working memory. In others words, it's a conscious and intentional act of creating a mental representation of a person, object, or event in one's mind (Lee and Shin, 2020; Yoo and Kim, 2014).

From a consumer behavior perspective, the planning and decision-making process for purchasing a product is greatly influenced by imaginative processes and the emotions they evoke. The consumer's mental image of a product serves as a primary source of information that assists them in forming judgments (Heller *and al.*, 2019). Consumers who become deeply engaged and elaborate mental imagery, start to develop a sense of ownership (Kim *and al.*, 2021).

Babin and Burns (1997) developed a three dimensional model of mental imagery consisting of vividness, quantity, and elaboration. Vividness refers to the clarity with which the individual experiences an image and reflects its quality, intensity, and distinctiveness (Bone and Ellen, 1992). Quantity refers to the number of images that come to mind during information processing (Bone and Ellen, 1992). Elaboration refers to the activation of information, in the generation of mental images beyond what is provided by the stimulus (Babin *and al.*, 1992).

In order to explore the possible role and influence of mental imagery, it is essential to pay close attention to both the creation and outcomes of experiential imagery. This research paper proposes a framework that links between three constructs: imagery eliciting stimuli, the imagery construct that mediates the effect of advertising tactics, and the resulting consequences of induced visualization.

### 2.2 Conceptual framework

The present research is based on Dual Coding theory (Paivio, 1971) which proposes that information can be processed through two distinct systems: the verbal system or logogens (like texts, words, and phrases) and the visual system or imagens (such as photos, drawings, and illustrations). This theory suggests that when information is encoded using both systems simultaneously, it enhances memory retention and recall compared to using only one system. The importance of Paivio's dual coding model resides in the fact that it provides a structural approach

that allows us to explain both iconic and verbal stimuli and the superiority of images compared to words. As indicated by Childers and Houston (1983), the imagery code is considered to be qualitatively superior to the verbal memory code.

Research related to mental imagery falls into two major streams. The first focuses on the effects of mental imagery and its antecedents on individual memorization. Empirical work in this stream primarily falls within the domain of cognitive psychology. One of the pioneers, Paivio (1971), developed the theory of dual coding and permanently established mental imagery in the issues of this research field. Subsequently, researchers in marketing became interested in the concept to test the effect of mental imagery on consumer memorization (Bone and Ellen, 1990; Lutz and Lutz, 1978, 1977). The second research is concerned with the effects of mental imagery and its antecedents on consumer attitudinal and behavioral responses. This study fits into this second research stream. Firstly, we examine the combinations of iconic and verbal advertising stimuli in eliciting mental imagery. Next, we investigate the effect of mental imagery induced by print advertising stimuli on consumer emotions and attitude. This investigation is particularly relevant due to the limited research on the influence of mental imagery on positive emotions, as well as the role these emotions play in mediating the connection between mental imagery and subsequent attitudinal responses.

### *2.3 Effects of the product presentation on mental imagery*

The choice of stimuli used in the print advertising can significantly influence mental imagery and behavioral consumer responses. This study investigates two mental-imagery-eliciting strategies: the incorporation of a photograph featuring a staged product with a human image, and the utilization of textual content accompanied by imagery instructions. We propose that the inclusion of staged products within photos featuring human subjects tends to be notably more effective in eliciting vivid mental imagery compared to photos with plain product presentation. This is because staged product photos are likely to generate more detailed mental images, as viewers are more likely to perceive themselves as the main characters in the advertisement.

Prior studies have demonstrated that incorporating a concrete image within in a print advertisement effectively elicit mental imagery, making abstract objects more palpable in consumers' minds (Babin and Burns 1997; Yoo and Kim, 2014). In accordance with Bone and Ellen's insights (1992), both the focal character and the plausibility aspects of the envisioned scenario stand as crucial elements enhancing imagery processing and promoting its engagement. Notably Lao's investigation (2014) asserts the superiority of staged imagery over a plain product presentation in the context of online shopping. Instructions to imagine refers to the use of product text, that provide additional guidance or directions contained in print ad tell consumers to imagine themselves with the product, specifically designed to facilitate imagery processing. Babin and Burns (1997) have showed that the presence of imagery instructions has a greater effect on the process of mental imagery than display not containing imagery instructions where consumers imagine themselves experiencing the depicted object in the given context. Therefore, we propose the following hypotheses:

- H1: Staged presentation of product elicits higher mental imagery compared to a plain product presentation.**
- H2: The presence of imagery instructions in product text elicits higher mental imagery compared to the absence of imagery instructions.**

### *2.4 Effects of mental imagery on positive emotion*

Mental imagery plays a crucial role in shaping emotion, described as consumers' predictions about how they feel before purchase. In fact, advertisement exposure, encouraging viewers to imagine positive scenarios involving themselves and the products advertised. Mental representation about a situation activate people's emotions by simulating real life situation. People experience positive anticipatory emotions and great pleasure when the imagined future outlook is positive (Lee and Qiu, 2009).

The positive effect of mental imagery on affective responses is supported in the literature review. Miller and Marks (1992) have shown that radio commercials with imagery-producing sound effects will create stronger emotional reactions and impact the moods or feelings that are evoked by advertisements. Escalas (2004) has shown that self-mental imagery tends to evoke a positive affect due to the immersion of the consumer in his own mental images, thus reducing uncertainty regarding the product. Yoo and Kim (2014) found that vivid mental imagery increased positive emotions experienced during online shopping. More recently, Ha *and al.* (2019) and Wu *and al.* (2020) found a significant effect of mental imagery elicited by online communication on positive emotional reactions.

Given the general positive nature of most ads, consumer imagery stimulated by an advertisement would be positive and would result in positive affect. Thus, we hypothesize the following:

**H3: Mental imagery positively influences the consumer's positive emotions.**

#### *2.5 Effects of mental imagery on attitude toward advertisements and brands*

Several studies have demonstrated that persuasive messages that stimulate higher levels of imagery will lead to more favorable attitudes. Attitudes refers to the evaluative judgments and opinions formed towards the brand and the advertising message. Consistent with this view, Babin and Burns (1997) confirmed that affective reactions elicited through self-mental imagery can positively influence attitudinal responses towards the brand and towards the advertisement. Bone and Ellen (1992) have shown that persuasive messages evoking greater imagery result in stronger attitudes toward the ad and the brand. Furthermore, Miller and Marks (1992) found that radio commercials with imagery-producing sound effects create more favorable attitude toward the commercial and create stronger brand attitudes.

Likewise, Fennis *and al.* (2012), have shown that high mental imagery generated by print advertising leads to more favorable brand attitude. More recently, in the context of e-commerce, Lee and Shin (2019) suggested that when consumers engage with online product presentations and evoke mental imagery, it leads to more positive attitudes towards apparel products. Moreover, Huang and Ha (2020) supported the role of mental imagery elicited by social networking communication to cultivate positive attitude towards the brand. Based on these findings, we formulated the following hypothesis:

**H4.a: Mental imagery positively influences the consumer's attitude toward brand**

**H4.b: Mental imagery positively influences the consumer's attitude toward advertising**

#### *2.6 Effects of positive emotions on attitude toward advertisements and brands*

Batra and Ray (1986) were the first authors to demonstrate that affective reactions positively influence attitudes toward the advertising. Furthermore, several authors (Batra and Ray, 1986; Aaker *and al.*, 1986; Holbrook and Batra, 1987) have examined the role of positive emotions (arousal and pleasure) on attitudes and have shown that these affective reactions positively influence attitudes towards the brand and attitudes towards the advertisement. Likewise, Burke and Edell (1989) demonstrated that the affective reactions generated by an advertisement help to facilitate and increase attitudinal responses towards the advertisement and the brand. However, the effect of positive emotions on consumer's attitude remains largely unexplored especially in recent studies. Due to this reasoning, we posit these hypotheses:

**H5.a: Positive emotion positively influences consumer's attitude toward brand**

**H5.b: Positive emotion positively influences consumer's attitude toward advertising**

#### *2.7 The mediation role of positive emotions*

Mental imagery can induce emotional responses that can result in positive attitudes towards a brand and ad. These positive emotions serve as a bridge between mental imagery and subsequent attitudinal responses. For instance, if a consumer visualizes themselves using a new product and elicit positive emotions, they are more likely to develop a positive attitude towards the product. Therefore, emotions act as a mediator, explaining the relationship between mental imagery and attitudinal responses.

Escalas (2004) demonstrated the mediating effect of positive emotions towards consuming a product through advertising in the relationship between both mental imagery and brand attitudes and brand evaluation. In a study examining mental imagery via radio advertising, Miller and Marks (1997) have shown that in response to imagery-evoking strategies, consumers engage in mental imagery processing which develops ad-evoked feelings and attitudes. likewise, Ha *and al.* (2019) demonstrated that mental imagery developed around visual and text messages in social networking communication elicit positive emotions, which lead to favorable attitudes.

However, only a few studies investigating the mediating role of positive emotions on the link between the mental imagery and consumer's attitude have been done. Consequently, we predict that mental imagery can increase consumer's positive emotions, which in turn can improve ad and brand attitude. Based on the above discussion, we formulated the following hypotheses:

**H6.a: Positive emotions mediate the relationship between mental imagery and brand attitude**

**H6.b: Positive emotions mediate the relationship between mental imagery and advertising attitude**

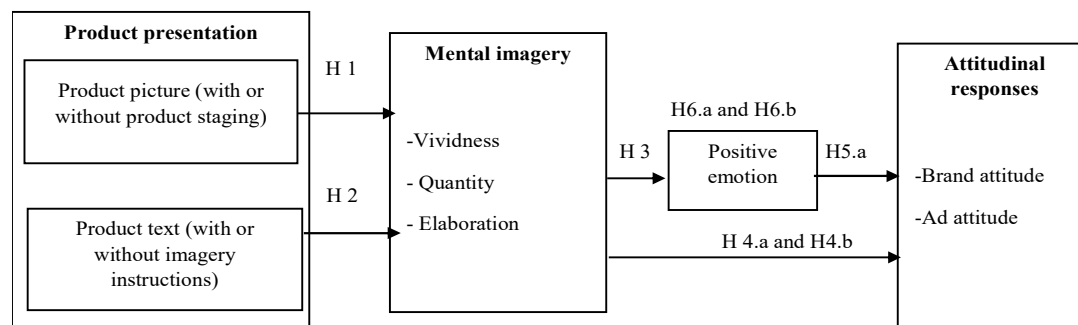


Figure 1. Conceptual model

### 3. Research methodology

#### 3.1 Design and stimulus

The product selected for this experiment is a smartphone, because of its widespread interest and familiarity among consumers. To eliminate any effects from participants' previous experiences with the brand, we use a fictitious name, "Smart Life", generated by ten students (5 men and 5 women) engaged in a brainstorming session.

We conducted four distinct experimental conditions, manipulating both the product image (with or without human image) and the product text (with or without imagery instructions) leading to the implementation of a factorial design (2 \* 2 = 4 posters). As a result, a total of four prints advertisements were designed by an advertising executive. To arrive at a satisfactory manipulation of the content of each ad, we conducted a pre-test with a total sample of 40 undergraduate students before completing the main survey. They rated the appropriateness of the content of each ad on a seven point Likert scale (1= lowest; 7 = highest) following the approach of Gavilan *and al* (2014).

#### 3.2 Manipulation checks

The results from the pre-test clearly demonstrate that all participants were able to differentiate between iconic and verbal stimuli. The outcomes of the independent samples T-test revealed significant differences between the iconic stimuli (with staged product - WS vs. without staged product - WOS) and the perception of appropriateness ( $t=3.946 / p=0.000$ ), as well as between the verbal stimuli (concrete text - CT vs abstract text - AT) and the perception of appropriateness ( $t=3.356 / p=0.002$ ).

The analysis of the means suggests that the product staging is notably higher in terms of appropriateness than that of the plain product presentation ( $\bar{X}_{WS} = 4.5 > \bar{X}_{WOS} = 2.75$ ). Moreover, it can be observed that the mean of the concrete text exceeds that of the abstract text, signifying that the inclusion of imagery instructions in the concrete text is more appropriate than the absence of imagery instructions in the abstract text ( $\bar{X}_{CT} = 4.25 > \bar{X}_{AT} = 2.8$ ). Consequently, it can be concluded that the manipulation of stimuli was successfully carried out.

#### 3.3 Participants and procedure

This study used a convenience sample consisting of 340 undergraduate students (53.5% males, 46.6% females) from a Tunisian university. The age of the respondents ranged from 20 to 25 years old. This specific consumer segment increasingly uses mobile devices as noted by Gavilan *and al* (2014). The experiment took place in a university lab study. Participants were randomly assigned to one of the four experimental conditions which means that each participant was exposed to a single poster and then asked to complete a questionnaire. Table 1 illustrates the four combinations of stimuli that were examined in this study.

Table 1: The factorial experimental design

Factors	Concrete text (CT) with imagery instructions	Abstract text (AT) without imagery instructions
Image with staging (WS)	Condition 1: WS+CT (N=85)	Condition 2: WS+AT (N=85)
Image without staging (WOS)	Condition 3: WOS+CT (N=85)	Condition 4: WOS+AT (N=85)

### 3.4 Measurement scales

This survey encompasses four constructs: mental imagery, positive emotion, brand attitude, advertising attitude, and demographic variables. Mental imagery was evaluated using thirteen items across three dimensions: vividness, quantity, and elaboration, as derived from previous research by Babin and Burns (1998). Positive emotion was assessed using nine items adapted from earlier studies by Richins (1997). Brand attitude was measured with four items sourced from Mitchell and Olson (1981). A scale for advertising attitude, based on four items used in Holbrook and Batra (1987), was also employed. In addition, we are integrated product category involvement as a control variable using the scale of Zaichkowsky (1985). All items employed in this study were developed on a five-point Likert-type scale (ranging from 1=strongly disagree to 5=strongly agree), except for the brand attitude and advertising attitude scales, which utilized a seven-point semantic differential type scale.

## 4. Analysis and Results

### 4.1 Exploratory factor analysis

In the first place, an exploratory factor analysis was conducted using SPSS 21. The results of the principal component analysis indicate that the Kaiser-Meyer-Olkin (KMO) index is above the recommended ( $>0.50$ ), suggesting an acceptable factor structure (mental imagery = 0.787; positive emotion = 0.779; brand attitude = 0.801; advertising attitude = 0.810). Moreover, the Bartlett's sphericity test demonstrates significance at a 5% level of risk, indicating a meaningful relationship among the observed variables. To assess reliability, Cronbach's alpha was employed to gauge the internal consistency of items within each construct. The alpha coefficient for each variable surpasses the recommended threshold of 0.7, indicating a satisfactory level of reliability (mental imagery = 0.843; positive emotion = 0.867; brand attitude = 0.921; advertising attitude = 0.856).

### 4.2 Confirmatory factor analysis

In the second place, a confirmatory factor analysis was performed using Amos 18 software. The outcomes reveal that the composite reliability coefficients are well above the recommended ( $>0.7$ ), indicating robust internal consistency (Nunnally and Bernstein, 1994). Additionally, the convergent validity is also above the recommended ( $>0.5$ ) (Fornell and Larcker, 1981). These results indicate that our constructs are reliable and valid at the confirmatory level. The factor loadings for the constructs exceeded the prescribed threshold of 0.5, ranging from 0.611 to 0.930. This indicates that the items are well representative of their respective constructs. The values of factor loadings, composite reliability, and AVE are detailed in Table 2. The assessment of the measurement model's fit displayed a favorable goodness of fit: (CMIN/df = 2.755; RMR = 0.047; AGFI = 0.931; GFI = 0.968; CFI = 0.928; NFI = 0.965; RMSEA = 0.052). These values suggest a satisfactory and good adjustment quality of the model.

Table 2: Confirmatory factor analysis

Variables	Items	Factor Loading	CR	AVE			
Mental imagery	Vividness	IM2	0.639	0.897	0.678		
		IM3	0.650				
		IM4	0.871				
		IM5	0.645				
	Quantity	IM7	0.771	0.917			
		IM8	0.930				
		Elaboration	IM9			0.818	0.883
	IM10		0.788				
	IM11		0.611				
	Positive emotion	PE3	0.752	0.906		0.736	
PE4		0.685					
PE5		0.725					
PE6		0.785					
PE7		0.751					
PE8		0.697					
PE9		0.666					
Brand attitude		BA1	0.898		0.930		0.770
		BA2	0.884				
	BA3	0.876					
	BA4	0.853					
Advertising attitude	ADA1	0.789	0.858	0.604			
	ADA2	0.867					
	ADA3	0.743					
	ADA4	0.700					

The discriminant validity was assessed following the approach outlined by Fornell and Larcker (1981), which suggests that the square root of Average Variance Extracted (AVE) should exceed the inter-construct correlations. The outcomes presented in Table III indicate the adequate discriminant validity of the various measurement scales.

Table 3: Discriminant validity

	Vividness	Quantity	Elaboration	Positive emotion	Advertising attitude	Brand attitude
<b>Vividness</b>	<b>0.823</b>					
<b>Quantity</b>	-0.001	<b>0.887</b>				
<b>Elaboration</b>	0.028	-0.002	<b>0.847</b>			
<b>Positive emotion</b>	0.275	-0.138	0.283	<b>0.873</b>		
<b>Advertising attitude</b>	0.089	0.120	0.043	-0.032	<b>0.777</b>	
<b>Brand attitude</b>	0.192	0.074	0.073	-0.055	0.364	<b>0.877</b>

## 5. Hypotheses testing

In the process of testing the research hypotheses, a two-factor ANOVA was performed for hypotheses H1 and H2. Structural equation modeling was used for hypotheses H3, H4, and H5. Furthermore, to investigate the mediation hypothesis presented in H6, Sobel's test was conducted.

Table 4: Effect of the product presentation on mental imagery (vividness, quantity, elaboration)

<b>Dependent variable: Vividness of mental imagery</b>			
Factors	F	P	Eta <sup>2</sup>
WS vs WOS	49.416	0.000	0.128
CT vs AT	18.004	0.000	0.051
WS vs WOS*CT vs AT	4.368	0.037	0.013
Group		Means	
WS		3.46	
WOS		2.81	
CT		3.33	
AT		2.94	
CT*WS		3.75	
CT*WOS		3.16	
AT*WS		2.91	
AT*WOS		2.71	
<b>Dependent variable: Quantity of mental imagery</b>			
Factors	F	P	Eta <sup>2</sup>
WS vs WOS	35.818	0.000	0.096
CT vs AT	64.967	0.000	0.162
WS vs WOS*CT vs AT	31.346	0.000	0.085
Groups		Means	
WS		3.69	
WOS		2.96	
CT		3.81	
AT		2.83	
CT*WS		4.52	
CT*WOS		2.85	
AT*WS		3.11	
AT*WOS		2.81	
<b>Dependent variable: Elaboration of mental imagery</b>			
Factors	F	P	Eta <sup>2</sup>
WS vs WOS	19.537	0.000	0.055
CT vs AT	38.421	0.000	0.103
WS vs WOS*CT vs AT	6.978	0.009	0.020
Groups		Means	
WS		3.43	
WOS		2.93	
CT		3.53	
AT		2.83	
CT*WS		3.92	
CT*WOS		2.93	
AT*WS		3.13	
AT*WOS		2.73	

As presented in table 4, the results of the ANOVA reveal that photos where the product is presented in a setting (WS) enhance all imagery's dimensions in a significant way, compared to the plain product presentation, increasing vividness ( $F(3, 336) = 49.416, p=0.000, \text{Eta}^2=0.128$ ), quantity ( $F(3, 336) = 35.818, p=0.000, \text{Eta}^2=0.096$ ) and elaboration ( $F(3, 336) = 19.537, p=0.000, \text{Eta}^2=0.055$ ). Upon examining the means of the two groups, it's evident that product staging indicates that is more likely to generate the facets of mental imagery namely vividness ( $\bar{X}_{WS} = 3.46 > \bar{X}_{WOS} = 2.81$ ), quantity ( $\bar{X}_{WS} = 3.69 > \bar{X}_{WOS} = 2.96$ ) and elaboration ( $\bar{X}_{WS} = 3.43 > \bar{X}_{WOS} = 2.93$ ), compared to plain presentation of the product. Therefore, hypothesis 1 is confirmed.

In the same way, the results of ANOVA indicate that the text with imagery instructions induce greater mental imagery than the text without imagery instructions, increasing mental imagery dimensions: vividness ( $F(3, 336) = 18.004, p=0.000, \text{Eta}^2=0.051$ ), quantity ( $F(3, 336) = 64.967, p=0.000, \text{Eta}^2=0.162$ ) and elaboration ( $F(3, 336)$



= 38.421,  $p=0.000$ ,  $Eta^2=0.103$ ). The means of two groups composing this variable on vividness of mental imagery reach 3.33 for concrete text and 2.94 for abstract text. Indeed, the product text with imagery instructions generates an important quantity of mental imagery compared to the abstract text without imagery instructions ( $\bar{X}_{CT} = 3.81 > \bar{X}_{AT} = 2.83$ ). Moreover, inspection of cell means revealed that the presence of imagery instructions elicits higher elaboration of mental imagery than the absence of instructions in the product text ( $\bar{X}_{CT} = 3.53 > \bar{X}_{AT} = 2.83$ ). Hence, hypothesis 2 was supported.

This variance analysis shows that the interaction between iconic stimuli (WS vs WOS) and verbal stimuli (CT vs AT) has a significant effect on mental imagery: vividness ( $F(3, 336) = 4.368, p=0.037, Eta^2=0.013$ ), quantity ( $F(3, 336) = 31.346, p=0.000, Eta^2=0.085$ ) and elaboration ( $F(3, 336) = 6.978, p=0.009, Eta^2=0.020$ ). Inspection of mean scores reveals that participants exposed to the combination of the concrete text with a product staging elicit the highest quantity ( $\bar{X}_{CT*WS} = 4.52$ ), elaboration ( $\bar{X}_{CT*WS} = 3.92$ ) and vividness ( $\bar{X}_{CT*WS} = 3.75$ ) of mental imagery. The combination that generate mental imagery, in the most positive way, is a staged product with a character image presentation with text accompanied by imagery instructions.

Table 5: Test of research hypotheses

Paths	Estimate	CR	P value	Result
Vividness-----→Positive emotion	0.284	4.504	0.000	Supported
Quantity-----→Positive emotion	0.353	4.716	0.000	Supported
Elaboration-----→Positive emotion	0.109	2.943	0.002	Supported
Vividness-----→Brand attitude	0.488	2.832	0.000	Supported
Quantity-----→Brand attitude	0.145	2.314	0.000	Supported
Elaboration-----→Brand attitude	0.254	2.250	0.011	Supported
Vividness-----→Advertising attitude	0.160	2.271	0.023	Supported
Quantity-----→Advertising attitude	0.125	0.146	0.884	Not supported
Elaboration-----→Advertising attitude	0.220	1.980	0.048	Supported
Positive emotion-----→Brand attitude	0.344	2.270	0.004	Supported
Positive emotion-----→Advertising attitude	0.427	2.936	0.003	Supported

The table 5 displays the outcomes of the structural analyses conducted to validate the research hypotheses. The results relating to the emotion as the dependent variable and mental imagery dimensions as independent variables showed a positive and significant effect of vividness ( $\beta=0.284, P<0.05$ ) quantity ( $\beta=0.353, P<0.05$ ) and elaboration ( $\beta=0.109, P<0.05$ ) on positive emotion. Hence, hypothesis 3 was supported.

Regarding the effects of mental imagery on attitude toward a brand, structural analyses results indicated a positive and significant effect of vividness ( $\beta=0.488, P<0.05$ ), quantity ( $\beta=0.145, CR=2.314, P<0.05$ ) and elaboration ( $\beta=0.254, P<0.05$ ). Thereby, hypothesis H4.a is validated.

Similarly, structural analyses results indicated that vividness ( $\beta=0.160$ ) and elaboration ( $\beta=0.220$ ) have a significant effect on advertising attitude, but quantity seemed to be a non-significant predictor of attitude toward advertisement. Thereby, we concluded that hypothesis H4.b is partially confirmed.

Furthermore, the findings showed that the positive emotions have a positive effect on attitude towards the brand ( $\beta=0.344$ ) and attitude towards advertising ( $\beta=0.427$ ). Consequently, hypothesis 5.a and H5.b were supported.

Table 6: The mediation test of positive emotion

Paths	Sobel test	P value	Result
Vividness----→Brand attitude	3.266	0.000	Partial mediation
Quantity----→Brand attitude	3.530	0.000	Partial mediation
Elaboration---→Brand attitude	2.535	0.006	Partial mediation
Vividness----→Advertising attitude	4.173	0.000	Partial mediation
Quantity-----→Advertising attitude	4.773	0.000	Total mediation
Elaboration-----→Advertising attitude	2.895	0.002	Partial mediation

Table 6 illustrates the mediating effect of positive emotion between mental imagery dimensions: vividness (Sobel test=3.266>1.96; P=0.000<0.05), quantity (Sobel test=3.530>1.96; P=0.000<0.05), elaboration (Sobel test=2.535>1.96; P=0.006<0.05) and brand attitude. The mediating role of positive emotion is partial since all imagery dimensions have a positive effect on brand attitude. Thus, H6.a is approved.

Furthermore, positive emotion has a partial mediating role in the formation of advertisement attitude through two of mental imagery dimensions' vividness (Sobel test=4.173>1.96; P=0.000<0.05) and elaboration (Sobel test=2.895>1.96; P=0.002<0.05). However, positive emotion mediates totally the influence of quantity on advertising attitude (Sobel test=4.773>1.96; P=0.000<0.05) due to the non-significant effect of quantity on ad attitude. Based on these results, H6.b is supported.

## 6. Discussion and implication

This paper is part of a stream of research aimed at better understanding the role of mental imagery elicited by product presentation in the context of print advertising. In particular, this study affirms that mental imagery elicited by product picture (with staging vs. without staging) and product text (concrete text vs. abstract text) can account for positive emotions and attitudes towards both a brand and an advertisement. This study furnishes academics with valuable insights into the dual coding theory. Our model extends the theoretical framework of dual coding theory of Paivio (1971) to include positive emotions and attitudes.

The findings demonstrate the effectiveness of product pictures with staging in evoking mental imagery. As a result, consumers are able to elaborate more vivid, and a greater number of mental images when products are presented on a stage, as opposed to a plain product presentation. This aligns with Lao's proposal (2014), which illustrated that photos featuring products in a setting evoke higher levels of mental imagery compared to those without staging.

Moreover, our results revealed that the effect of concrete text on eliciting mental imagery differs from that of abstract text. Specifically, concrete texts with imagery instructions have the ability to enhance the vividness, quantity, and elaboration of mental imagery compared to abstract texts without imagery instructions. This finding is in line with the study conducted by Babin and Burns (1997), who assert that the presence of imagery instructions can effectively stimulate mental imagery processing.

This research contributes to the study of both print product presentation and mental imagery by examining the interaction effects of product pictures and product text simultaneously. Our findings demonstrate that staging a product with concrete text, including imagery instructions, is highly effective in evoking vivid, abundant, and elaborate mental imagery. These results diverge from the findings of Lao (2014), who infirmed the effect of text-image combinations on self-mental imagery. Our results provide empirical evidence to support Paivio's dual coding model, which states that the interaction between visual and verbal systems influences mental imagery.

Additionally, the study's findings indicate that mental imagery elicited by print advertising can enhance consumer's positive emotions. This is consistent with the arguments put forth by Escalas (2004); Lao (2014), Yoo and Kim (2014); and Kim *et al.* (2021), who argued that mental imagery serves as an antecedent of consumer's positive emotions. In fact, when consumers elaborate abundant, well defined and very clear images in their minds, they experience feelings of happiness and excitement toward a product. The more the consumer envisions themselves using the displayed product, the more favorable emotional reactions will be (Lao, 2014).

Further drawing on the discussion regarding mental imagery's impact on consumer attitudes, our findings are consistent with previous studies (Escalas, 2004; Lee and Shin, 2019; Huang and Ha, 2020), indicating that the process of eliciting mental imagery can positively influence consumer attitudes. According to Escalas (2004), self-mental imagery can divert the consumer from critical thinking, thus leading to more favorable attitudinal responses. This verdict aligns also with the findings of Park and Yoo (2020), who argued that when consumers vividly and clearly elaborate mental imagery, they tend to develop a more favorable attitude towards a product.

In line with previous research, such as Derbaix (1995) and Escalas (2004), positive emotions have a positive effect on consumer attitudes. Therefore, when consumers experience happiness and develop positive emotional reactions, they are more likely to form a favorable attitude towards an advertisement and the associated brand.

Mental imagery can also indirectly enhance consumer attitudinal responses through the influence of positive emotions. As a result, our study supports the mediating role of positive emotional reactions between mental imagery and consumer attitudes. This finding is consistent with Escalas's (2004) research, which suggests that favorable consumer attitudes towards an advertisement and a brand are more likely to increase when greater mental imagery processing leads to improved positive emotional reactions.

Certain managerial recommendations regarding how a product is presented in print advertisement need to be considered. As marketing professionals seek to optimize their strategies, the effectiveness of different imagery-evoking techniques has emerged as a focal point of the present research attention. Through a comprehensive analysis of consumer responses, we endeavor to provide valuable insights that can guide marketing practitioners in crafting more impactful and persuasive advertising campaigns.

The current study revealed that the inclusion of staged product and imagery instructions in the design of print advertisements stimulates mental imagery in terms of quantity, vividness and elaboration. Likewise, imagery instructions used in our study significantly enhance all three dimensions of mental imagery. Furthermore, our findings revealed that the most effective combination involves a picture of the staged product along with textual content consisting of imagery instructions. This combination tends to create advertising that evokes imagery eliciting a greater quantity, more vivid, and better-elaborated mental images.

Advertisers need to consider how designing print advertisements copy, which guides consumers to elaborate mental imagery, leading to a significant impact upon the targeted consumer's responses. Indeed, we provide empirical evidence to support the influence of mental imagery evoked from a print ad in engendering positive emotions and generating favorable attitudes towards the advertised products among the targeted consumer. Additionally, we explore the mediating role of emotions between mental imagery and attitude.

#### **Limitations and future research directions**

We note that the present research comes with several limitations, offering promising directions for future research. Our experiment was designed with university students, who may not be representative of the whole target market. It would be of interest to replicate our findings across different targets and examine whether our results hold true to further enhance the generalizability. Furthermore, our current research has not considered individual disparities in mental imagery ability. Addressing this gap, future studies should investigate these differences based on variables such as consumer expertise levels, verbal and visual processing style, and potential implications stemming from these variations.

Thirdly, our study's scope has been limited to specific stimuli designed to evoke mental imagery, which were selected for experimental assessment. Other unexplored avenues of product presentation strategies warrant investigation. While we focused on smartphone products due to their wide adoption and consumer familiarity, future research should examine more diverse product categories.

In essence, while our research contributes valuable insights, these outlined limitations offer valuable pathways for future scholarly inquiries, enriching our understanding of mental imagery's impact in advertising contexts.

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