



When Vivid Presentations Backfire: Evaluating the Combined Effects of Dynamic Presentations and Physical Distance on Consumers' Intentions from An Attentional Resources Perspective

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(Degree)

博士 (経営学)

(Date of Degree)

2022-03-25

(Date of Publication)

2024-03-25

(Resource Type)

doctoral thesis

(Report Number)

甲第8276号

(URL)

<https://hdl.handle.net/20.500.14094/D1008276>

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博士論文

When Vivid Presentations Backfire: Evaluating
the Combined Effects of Dynamic Presentations
and Physical Distance on Consumers' Intentions
from An Attentional Resources Perspective

情報のビビッド表示形式の逆効果：注意資源
の視点から見る動的表示形式と物理的距離
との組み合わせが消費者の意図に及ぼす
影響

2022年1月20日提出

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栗木 契研究室

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Acknowledgments

First and foremost, I want to express my gratitude to my supervisor, Professor Kei Kuriki, a respectable scholar, who has provided very valuable guidance through each stage of my research process. Without his enlightening guidance and patients, I could not have my dissertation completed. Moreover, he does not only give advice on my research but also lets me know the proper attitude as a scholar. His attitude towards research and teaching is a model for me in my future career.

I am also grateful to the reviewers of this dissertation, Professor Munehiko Itoh, Associate Professor Fumikazu Morimura, and Professor Chieko Minami, for their insightful and detailed comments on my research and dissertation, which helped me improve and finish the dissertation.

I shall extend my thanks to Ms. Zhuang Xuhong for her help on the first experiment, and Associate Professor Mari Yoshida for all her kindness and help.

Last but not least, I would like to thank my parents who always support my decisions. Without their support, I will never realize my dream of becoming a scholar. Thanks to my husband for taking care of me and our daughter when I was writing this dissertation. My special thanks to my daughter, who is always healing me since she comes to this world. Thanks to all my friends in Japan, who make my life in Japan colorful and wonderful. They kept me going.

I. Instruction

I-1. Research background

Marketers prefer to employ attractive ways, such as flashes, slide pictures, scroll words, three-dimensional animation, etc. in marketing communications to make consumers believe products' implications which they claimed in messages are true and consumers could form high purchase intentions toward products. They believe that such vivid information¹ could stimulate consumers to generate mental imagery about the products and to form positive attitudes toward the described products (MacInnis & Price, 1987; Mathews, 1994). They even prefer to employ more than one vivid factor to introduce products.

Here, *vivid information* is “as likely to attract and hold our attention and to excite the imagination, to the extent that, (a) emotionally interesting, (b) concrete and imagery-provoking, and (c) proximate in a sensory, temporal or spatial way” (Nisbett & Ross, 1980, p. 45). Dynamic presentations are able to lead consumers to involve in the information in the mediated environment (Steuer, 1992). Consumers could form more vivid images from such information than static ones (Nisbett & Ross, 1980). Hence, it is considered that dynamic presentations are more vivid than static presentations.

On one hand, both previous research findings and experience evidence suggest that vivid messages result in more favorable responses to products (Babin & Burns, 1997; Burns, Biswas & Babin, 1993; Choi & Taylor, 2014; Kim, Baek & Yoon, 2020; Petrova & Cialdini, 2005; Roggeveen, Grewal & Townsend, 2015; Sundar & Kalyanaraman, 2004; Trended, Mazodier & Vohs, 2018; van Kerrebroeck, Brengman & Willems, 2017; Zhao, Dahl & Hoeffler, 2014). On the other hand, the development of Information and Communication Technologies (ICT) makes it easier and cost-friendly for marketers to produce more attention-getting communication messages than ever before. Consequently, marketers increase the usage of dynamic presentations such as animated pictures (Li & Bukovac, 1999;

¹ Vivid information is also referred to as a vivid message. The terms “information” and “message” are used interchangeably in this research.

Roggeveen et al., 2015), three-dimensional technologies (Choi & Taylor, 2014; Kim et al., 2020), and even augmented reality (Yim, Chu & Sauer, 2017) in introducing products on various media like billboards and online platforms.

The cognitive process of the consumer information processing model presumes that attention is the very first step and an antecedent for further information processing (Peter & Olson 2009). Visual attention to the communication messages may be obtained with the dynamism characteristics of messages. It leads consumers to proceed with the processing from attention to action (Kuisma et al., 2010; Peter & Olson, 2009). Therefore, it is pivotal to understand the persuasive effects of vividness in the persuasiveness of information for both marketers and academics.

In this research, we specifically focus on the dynamic presentations of animation (i.e., scrolling text, slide pictures) in the mass communication scene rather than other vivid formats (e.g., VR, 3D, AR). The reason is that animation is more widely used than other dynamic presentations for its flexible and cost-friendly attributes.

I-2. Research gaps

The impacts of vivid stimuli on individuals' judgments and behavior are discussed widely. However, the influence of vivid information is still vague. Some researchers claimed that vividness positively affects consumers' intentions while other researchers suggested that the effects of vivid information are no different from the nonvivid ones (Collins, Taylor & Wood, 1988; Hong, Thong & Tam, 2004; Taylor & Thompson, 1982; Toet et al., 2019), or that vividness even adversely affects the persuasiveness of messages (Frey & Eagly, 1993; Guadagno, Rhoads & Sagarin, 2011; Smith & Shafer, 2000).

Prior researchers attempted to solve the problem of the uncertain effects from several perspectives (Blondé & Girandola, 2016; Collins et al., 1988; Frey & Eagle, 1993; Keller & Block, 1997; Smith & Shaffer, 2000; Taylor & Thompson, 1982). Some of them compared the vividness effects by the comparison of various manipulation of vivid antecedents which could exert the effects. For example, they manipulate vividness by the presentation formats of messages (Roggeveen, et al., 2015), or the characteristics of message text (Burns et al., 1993). Other researchers discussed the boundary conditions of vividness effects such as cognitive elaboration

(McGill & Anand, 1989), or congruency between the statement of information and vivid elements (Smith & Shaffer, 2000).

Although prior research has already done a lot of efforts to find why vivid messages exert controversial effects, there is little research that takes account of the attentional resources. The reception and comprehension of messages share the general attentional resources (Kahneman, 1973; Wickens, 1984). Vivid messages may catch consumers' attention in noisy environments, while the perception of such vivid messages may influence the comprehension process by competing for the common attentional resources in turn (Lavie, 1995; Lavie & Tsal, 1994; Peter & Olson, 2009).

The present research brings in a new factor named the physical distance to try to clarify the puzzle of vividness effects. The physical distance indicates the actual distance between consumers and the information.

The reason why we introduce this factor is that for one thing, the physical distance could influence the allocation of attentional resources by its impact on perceptual load (Lavie, 1995). For another thing, it is demonstrated that physical proximal messages can exert a vivid effect and influence consumers' evaluation of products since consumers always input more attention to a proximal message and they would like to engage in more vivid mental imagery of it (Jia, Huang & Wyer, 2017; Nisbett & Ross, 1980).

In fact, when we come across various messages, they are always accompanied by the different physical distance between consumers and message media. To develop more effective communication appeals, it is valuable for both marketers and researchers to understand whether vivid presentations are still persuasive for consumers when we are aware of the physical distance issue. Whether these two attention-getting factors, saying dynamic presentations and the physical proximity in combination would have a beneficial impact on consumers' product evaluation and intentions.

However, it is surprising that the physical distance should be always ignored when prior researchers discussed the vividness effects of dynamism. First, the investigations in both consumer behavior and social psychology only investigated the impacts of dynamic information and physical distance independently, no work to the best of our knowledge has specifically addressed why vivid presentations

such as dynamic information can be effective both positively and negatively while considering the physical distance. Second, both dynamic formats and physical proximity could capture consumers' attention, thus, attention should play a role in the persuasiveness of vivid messages. Attentional resources support individuals' performance on perception and sequence comprehension processes, nonetheless, the discussion of it on the vivid information is not enough. This research attempts to fill these gaps from the perspective of attentional resources.

I-3. Research questions and objectives

Regarding more than one factor which could exert vividness effects in combination, intuition might suggest an attractive effect on consumers' imagery processing and subsequently on their attitudinal judgments and intentions toward products. However, along with the gaps of prior research, we propose 3 research questions.

RQ1: Can we get constant vividness effects? Especially, when we take account of the physical proximity between consumers and marketing communication messages, could the effects of dynamic presentations tend to be stable.

RQ2: How do the attentional resources play the role in the processing of vivid information?

The consumer information processing model depicts the processes from the phase that consumers pick up target information from chaotic environments, the interpretation phase which includes attention and comprehension of information, the integration phase of knowledge to further behaviors caused by the information of consumer information processing (Peter & Olson, 2009). This research positions the attention/comprehension phase in the consumer information processing model and discusses the condition when vivid messages do (or do not) work on consumers' intentions from the attentional resources' perspective.

What we investigate in the present article is how consumers generate mental imagery of a product and subsequently form judgment intentions and purchase intentions by the message which both the dynamic presentation and physical distance are considered.

Visual² and verbal³ are fundamental forms of communication messages. According to cognitive psychology, the processes of verbal and visual information are executed by two different systems (Paivio, 1991). Both verbal and visual information could influence the elaboration of mental imagery. In order to improve the generality of the present research, we discuss the vividness effects in both verbal information and visual information context from the attentional resources' perspective.

We assume that for verbal information, consumers would have lower intentions of positively evaluating the product and purchasing when the information is shown by dynamic (vs. static) formats in a physical proximity condition. Controversially, consumers would have higher intentions when the information is shown by dynamic (vs. static) formats in a physical distal condition. For visual information, the controversial effects can be considered. That is, consumers would have higher intentions of positively evaluating the product and purchasing when the information is shown by dynamic (vs. static) formats in a physical proximity condition. Controversially, consumers would have lower intentions when the information is shown by dynamic (vs. static) formats in a physical distal condition. Furthermore, we suppose that the physical distance between consumers and information may provide an interpretation of the uncertainty of vividness effects.

I-4. Significance of this research

This research invests how the combination of dynamic presentations and the physical distance between consumers and mass communication messages affects consumers' intentions of the depicted products. We utilize a verbal message as well as a visual message as the stimuli to examine the effects. The present research advances knowledge from several perspectives.

First, although a plethora of prior work confirmed the positive influence of dynamic presentations on promoting products (Choi & Taylor, 2014; Kim et al., 2020; Roggeveen et al., 2015; Sundar & Kalyanaraman, 2004; van Kerrebroeck et al., 2017), we identified a particular condition – the physical distance between

² Visual information is limited to pictorial representation of products in this research.

³ Verbal information is limited to textual representation of products in this research.

consumers and messages, in which dynamic presentations might backfire. It is crucial for marketers to understand when such vivid formats can effectively increase consumers' intentions toward products when it does not work or is even negatively influence consumers. Thus, they could design attractive and persuasive appeals successfully when introducing products.

Second, by applying the load theory of attention to consumer information processing, this research provides a new perspective and deepens our understanding of the contexts in which vividness is likely to exert an influence.

Finally, it adds to prior research on mental imagery. This research identifies the mechanism role of mental imagery in the combined effects of dynamic presentations and physical distance. The results show that the combination of two factors that could generate vivid mental images might inhibit the formation of mental imagery. To the best of our knowledge, the present research is the first to demonstrate that these two imagery-evoking strategies in combination become ineffective.

I-5. The structure of this dissertation

The composition of this dissertation paper is as follows. First, on the basis of the literature review of the definition of vividness effects, *Chapter II* reviews the impacts of vividness effects on consumers' behavior. After reviewing the definition of attentional resources and the theory of attentional resources allocation, *Chapter III* reviews the relationship between the allocation of attentional resources and vivid presentations. *Chapter IV* examines the combined effects of two vivid elements of verbal information on consumers' intentions. Then, *Chapter V* clarifies how the consumption of attentional resources influences the effects of vivid verbal information. Moreover, *Chapter VI* indicates the combined effects of two vivid elements of visual information on consumers' intentions. Finally, *Chapter VII* concludes the main findings of this paper and suggests the theoretical and management implications.

II. The impacts of vividness effects on consumers' judgments

Researchers in psychology, education, communication, and consumer behavior field invested many efforts in vividness effects in recent years (Collins et al., 1988). The concept of vividness effects was first put forward in the social psychology field. It is suggested as a factor that biases social inference referred to as the vividness criterion (Nisbett & Ross, 1980; Taylor & Thompson, 1982). Individuals make social judgments against the availability heuristic. The availability heuristic refers to a mental shortcut that depends on immediate examples that come to one's mind when they execute inference (Tversky & Kahneman, 1974). It is supposed that vividly presented information can influence the availability heuristic. After that, a growing number of marketing researchers examine the effects of vividly presented information because it is believed that such an attention-getting strategy could affect consumers' intentions positively.

This chapter first retrospects the conceptual background of vividness. On the basis of this, it discusses the attention-getting role of vivid presentations in consumer information processing. Then, this chapter spatially goes through the vividness effects exerted by dynamic presentations and physical distance are reviewed. After that, the research of a mechanism factor named mental imagery is reviewed. Finally, the reverse effects of vividness are discussed.

II-1. The conceptual background of vividness effects

As mentioned above, Nisbett and Ross (1980, p.45) defined that vivid information is "likely to attract and hold our attention and to excite the imagination to the extent that it is (a) emotionally interesting, (b) concrete and imagery-provoking, and (c) proximate in a sensory, temporal, or spatial way." Compared with pallid information, Nisbett and Ross (1980) (also see Taylor & Thompson, 1982) demonstrated that vivid information may exert effects from four aspects to interfere with individuals' judgments.

First, such information can be encoded more effectively than pallid information. According to Nisbett and Ross (1980), vivid information may be encoded more effectively than pallid one for below reasons. On one hand, vivid information is

always considered more attractive, thus it could draw more attention from consumers. Consumers are attending to put more attention into processing the vivid information. This imbalanced attention input leads to more encoding of vivid information. On the other hand, vivid information is likely to be more available since it's always more interesting than a pallid one. An interesting vivid information will be stored, rehearsed, and elaborated more than a pallid one. It results in vivid information effectively encoding more than pallid information. As the result, vividly presented information may improve later availability and influence further judgments.

Second, the differential recall of vivid information versus pallid information makes consumers' judgments variously. For one thing, the effective encoding of vivid information as previously mentioned is more available than pallid information. The recalled volume of vivid material should be greater than pallid ones. For another thing, vivid information is considered to have several features such as concreteness, colorful and imaginability. All of these features make the recall of vivid material faster and easier. Therefore, individuals' judgments are influenced by the valid material recalled.

Third, vivid materials are imageable. Individuals may multiply encode vivid information to form an image. Vivid information attracts consumers' attention to elaborate more on it. It leads consumers to generate vivid images of it because of the ease and fluency which they formed from the information (Broemer, 2004; Petrova & Cialdini, 2018). The conduct of the images generated from vivid information would impact the elaboration process of individuals and further influence persuasion of the information (Bone & Ellen, 1992; Escalas, 2004; Petty & Cacioppo, 1984). We will also discuss the role of mental imagery in vividness effects in section §II-5 in detail.

Finally, vivid information affects individuals' judgments by eliciting more emotional interest. The emotionally arousing information is better encoded and retrieved easier by its affective properties. An emotionally arousing information is, to some degree, affects the vividness of the image individuals formed from the information and influences more on the subsequent judgments (Alter & Balci, 2011).

There are several manipulations to exert vividness effects (Taylor and Thompson, 1982). For instance, (1) the use of concrete, specific language, (2) pictorially illustrated or videotaped information, (3) direct experience, and (4) case history information.

In these manipulations, the usage of concrete, specific language, and picture/video are more relevant to consumers' intentions. Researchers always invest efforts in the effects of the first two ways. For example, Fennis, Das, and Fransen (2012) manipulate vivid advertising by using concrete words. They demonstrate that, for informational ads for a functional product, concrete words produced a significantly more positive brand attitude than pallid words. Keller and Block (1997) indicated that the persuasiveness of vivid information could be enhanced or reduced by presenting it in concrete or abstract languages. Roggeveen, Grewal, and Townsend (2015) employed video and slides to demonstrate a dynamic presentation format (vs. static) that influences consumer choice of a hedonic product. Ophir et al. (2019) demonstrated that a visual presentation is more vivid than a verbal description. Visual presentations can increase individuals' intention to quit smoking.

II-2. Vividness as a means to affect consumer information processing

The consumer information processing model (Peter & Olson, 2009) explained consumers' cognitive processes involved in the interpretation, integration, and knowledge formation of information (see Figure 1). This model indicates the steps from attention to actions of stimuli information that consumers input from environments.

As Figure 1 shows, the cognitive process of this model indicates 3 parts which include 8 stages of the information processes. They are interpretation, integration, and product knowledge in memory. In interpretation processes, consumers selectively perceive the information in the environment around them. The sustaining exposure to information leads to two related cognitive processes of attention and comprehension. Attention means which information consumers intend to interpret while ignoring others (James, 2007). Comprehension means consumers' understanding of information and how they create knowledge, meaning,

and beliefs according to their understanding. The knowledge, meaning, and beliefs may be stored in memory and later retrieved when consumers need to use them in integration processes. In integration processes, consumers combine various knowledge to form evaluations of products and choose their intentions or behaviors such as purchase intentions or an actual purchase. In this phase, consumers may also combine affective feelings or affective responses with the knowledge to form intentions or behaviors. Product knowledge and involvement refer to the various types of knowledge, meanings, and beliefs about products that are stored in consumers' memories.

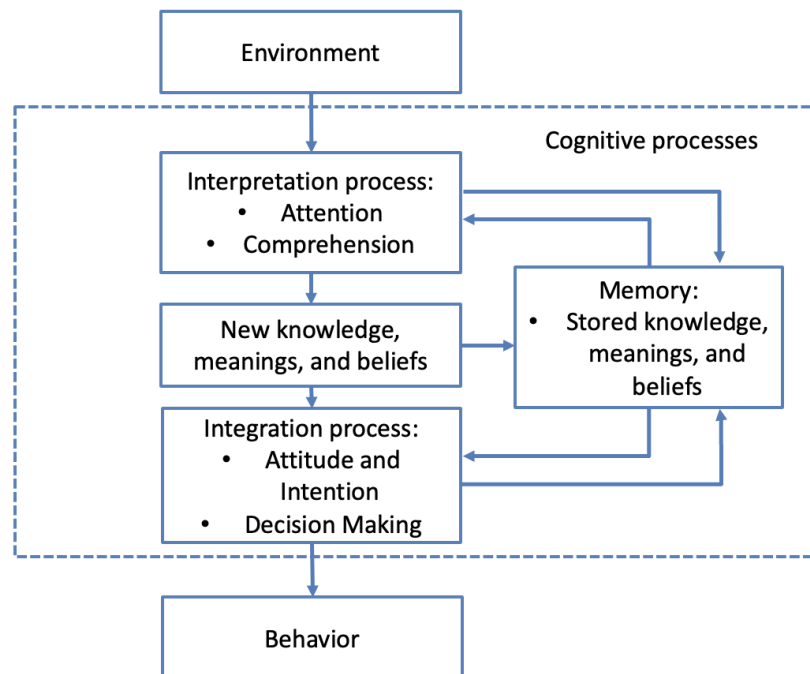


Figure 1. Consumers' Cognitive Processes Involved in Interpretation

Source: Peter and Olson (2009, P.102)

The present research is concerned about the consumer information processing model because this model emphasizes the issue that attention to the stimuli in environments is the very first step of consumers' processes of information. The cognitive process of this model indicates the essentiality of the limited capability of attentional resources accounts in consumer behaviors. Moreover, vivid presentations are considered as the ways to improve the prominence of information

in external environments. The main theme of this research is just the impacts of vivid presentations within the interpretation parts of attention/comprehension phase in this model. (Peter & Olson, 2009).

According to this model, consumers are always accidentally exposed to some marketing information in external environments. In the randomly accidental exposure situation, consumers would not maintain their attention to the information (McQuarrie & Mick, 2003). Thus, marketers have to adopt some measures to maintain consumer exposure. Only if consumers are exposed to the information, they can go into the next step, saying interpretation processes of attention and comprehension.

Attention implies selectivity (Kahneman, 1973). Consumers have to select what they attend to process from the noisy environment, further, to what extent to process the received information. Several factors are considered to influence consumers' attention to information. For instance, consumers' general affective states, consumers' involvement with the information, and the prominence of the information in the environment (Peter & Olson, 2009). When we consider prominence, it also refers to the vivid attributes of information such as colorful (vs. black-and-white) (Son, Lee & Choo, 2015), pictorial images (vs. textual information) (Zhao et al., 2014; Zhao & Xia, 2021), animated presentations (vs. static presentations) (Kuisma et al., 2010; Hong et al., 2004), videos (vs. pictures) (Roggeveen et al., 2015; van Kerrebroeck et al., 2017), etc. The vividly presented information is deemed to facilitate selective attention and push consumers to process the target information (Peter & Olson, 2009).

II-3. Dynamic presentations as a vivid strategy on consumer purchase intentions

As above mentioned, in real-life communication, marketers prefer to employ various media to convey messages to consumers because they presume such media could catch consumers' attention. Moreover, in the technological environment, various multimedia technologies such as audio, video, and animation can produce a sensorial rich mediated environment (Steuer, 1992; Hong et al., 2004). All of these are made information prominent easily and attention-getting. Accordingly, in information communication technology, advertising, and consumer behavior

research fields, the persuasive effects on consumers' intentions of such vivid means are widely discussed.

For example, Hong et al. (2004) examined the influence of flash animations on consumers' attention in the online shopping context. They set up an online shopping web page to simulate consumers' real online purchase experience. Participants are told to suppose they would purchase the product of a specific brand in the online shopping task. By making the target product with (vivid)/without (nonvivid) the flash effects, they measured the reaction time of how long participants found and clicked the icon of the target product as an indicator of attention-grabbing. The results show that, in a high-density design of the web page, the reaction time is shorter to find the target product with flash effects than the one without flash. That is flash animations do attract users' attention to locate their sight to target items.

Roggeveen et al. (2015) lay focus on the consumers' preference that is affected by the vividly presented information. By manipulating vivid conditions by using dynamism (vs. still), they assumed that presentation formats such as video and slide (vs. still picture) will affect consumers' product evaluation and choice behaviors. Past researchers find that dynamic presentation formats elicit viewers' feelings of more involvement (Steuer, 1992). A greater decision involvement increases the recipient's elaboration on potential benefits (Strahilevitz & Loewenstein, 1998) of products, and the elaboration is influential on individual decision processing (Keller & McGill, 1994). Viewers are better able to imagine the experience of using the product accordingly. Whereas hedonic attributes are more sensory and image-evoking (MacInnis & Price, 1987). Presenting products and services in a dynamic visual format enhances consumers' involvement in the experience, their more elaboration, and more imagining of using the product. Hence, individuals are more prefer hedonic options when they see dynamic format presentations (Roggeveen et al., 2015).

II-4. The vividness effects of the physical distance on consumer judgment intentions

When consumers perceive visual information, there are two process types: object processing (what is it?) and spatial processing (where is it?). Object processing is associated with the properties of the object, while spatial processing refers to the

spatial relations between objects and other stimuli or the self (Adaval, Saluja, & Jiang, 2019). Recent findings from marketing research show that the physical distance could influence consumers' evaluation and preference of the described product. There are two research streams about the effects of physical distance.

One stream is the impact of physical distance between objects in print advertising on consumers' judgments of products. For instance, Chae, Li, and Zhu (2013) indicated that the spatial proximity between two objects affects consumers' judgments of products. It shows that the proximity of two images in an advertisement will influence individuals' probability estimates. For example, individuals will judge a cream as more efficient when putting the picture of an anti-acne cream and a face without acne problem spatially proximal to each other than spatially distal from each other. According to the judging causality, people prefer to infer the causal relatedness between the product and the effect when placing two pictures close to each other. Furthermore, they conclude that the product is useful by the causal link with the closer no-acne problem face picture.

Another stream is the impact of the physical distance between people and communication messages on consumers' judgments accordingly. In recent marketing investigations, some research also provided evidence to support that physical proximity also could exert a vividness effect. Huang, Jia, and Wyer (2017) clarified that the distance between consumers and billboards could affect consumers' preference for brand extension. When consumers perceive the distance between themselves and a picture of the extension closely, they would feel more favorable of a parent brand good-fitting extension (Williams & Bargh, 2008). Jia et al. (2017) illustrated that the physical distance between consumers and object verbal description of products influences consumers' belief in message implications. Individuals may form visual images when reading information about stimuli (Wyer, Hung, & Jiang, 2008; Wyer & Radvansky, 1999). They would devote more attentional resources (Nisbett & Ross, 1980; Taylor & Fiske, 1978) to proximal messages. Consumers' physical distance from stimuli influences the vividness of images that they formed from verbal messages and the perception of the information content (Jia et al., 2017; Jiang & Wyer, 2009). When recipients get close to verbal messages, the cognitive resources that recipients allocate to the

message implications estimate will increase. In consequence, recipients' belief in the implications presented by the verbal messages will also induce (Jia et al., 2017).

II-5. The mechanism of vividness effects – mental imagery

As reviewed in §II-1, one of the properties of vividly presented messages is image-evoking. The imaginability of information influences the persuasiveness of vivid information in turn. Therefore, mental imagery is the most discussed mechanism when researchers evaluate the influence of vividness on consumer behaviors.

Mental imagery refers to “a mental event involving visualization of a concept or relationship” (Lutz & Lutz 1978) and involves perceptual information processing, in which information is represented in an individual's working memory using imagination. Walters, Sparks, and Herington (2007) suggested that imagery has two dimensions: elaboration and quality. Elaboration refers to the number of images evoked in one's mind. Quality relates to their vividness, clarity, intensity, sharpness, and appeal (Anand & Sternthal, 1990). That is, vivid information could elicit consumers to form mental images (Nisbett & Ross, 1980) about what depicts in the information, and the effect of vivid information is depending on the level of the vividness of the mental image. The reason is that vivid messages stimulate visual attention and support the formation of concrete sensory experience as well as vivid mental imagery (MacInnis & Price, 1987).

The introduction of asking individuals to perform image activity about stimuli information directly is considered as a vivid way to influence consumers. For example, we can always see slogans such as “Imaging yourself at the sea in summer.” in travel advertisements. For example, Kisielius and Sternthal (1984), and Roggeveen et al. (2015) demonstrated that some vivid presentations might influence individuals' judgments by the presence or absence of the instruction that asked participants to imagine about the stimuli. They found that, when participants are asked to imagine about the products, their preference for products gets higher than the condition that there is no introduction even the content of the message itself is the same across conditions.

Trendel et al. (2018)⁴ discussed the mediation effects of mental image directly. They manipulate vividness by text (novivid information), pictures (vivid information), and image-evoking text (vivid information) on consumers' implicit attitudes with an article that criticized an exaggerated advertisement of the dishwasher. In this study, the participants read an article in which the Consumer Council criticized the hype of a dishwasher first. They formed an implicit attitude toward the dishwasher from this article. Then, they reported the valence of the mental images. The results demonstrated that the text had a weaker influence on the implicit attitudes formed by the articles than the imagine-elicited text and pictures. Furthermore, this effect was mediated by the affective valence of mental images.

Flavián, Gurrea, and Orús (2017) examined the mediation effects of mental imagery without the instruction of mental imagery. They demonstrated the influence of the presence and the absence of a video on consumer attitudes during online product promotion. In this study, the authors found that consumers were more likely to evoke images of products under conditions where promotional videos and demonstration videos were used for product display and that the ease of evoking images was associated with consumers' favorable attitudes toward the products. This study confirmed that consumers' favorable attitudes toward products and their purchase intentions were enhanced under the conditions in which promotional videos and demonstration videos were used in product displays.

II-6. The reverse effects of information vividness

Although a lot of anecdotal experiences demonstrate positive vividness effects, there is no robust evidence to support the constant vividness effects in academic research (Taylor & Thompson, 1982).

Some researchers suggest that compared with pallid messages, the impacts of vivid messages, despite the potential to draw consumers' attention, have no difference with pallid ones. Other researchers even claim that vivid messages might

⁴ This research didn't mention vividness effects. However, based on the definition of vividness (Nisbett & Ross, 1980), pictures and imagine-elicited text could generate more images than text, so we considered video and imagine-elicited text are vivid information, while the text is nonvivid information.

undermine persuasiveness (Frey & Eagly, 1993; Kisielius & Sternthal, 1986). For example, in Taylor and Thompson's (1982) review, dozens of studies showed that the vividness hypothesis seems self-evident. Researchers are exploring why there are contradictory effects of vividness from both empirical and theoretical approaches.

From the empirical approach, many researchers tried to clarify the boundary conditions of when vivid information plays a role in persuading consumers positively and the conditions that such information negatively affects consumers.

For example, Smith and Shaffer (2000) provided evidence that vividness could enhance or undermine the persuasion of information by the information congruency perspective. They suggested that highly congruent imagery leads to the favorable of message processing because it can prime relevant information stored in memory. If the vivid elements are congruent with the message statement, individuals would be motivated to elaborate the message contains more. Therefore, vividness could enhance the persuasiveness of the message. In contrast, if there is no congruency between vivid elements and the message theme, it will undermine the vividness effects on persuasion.

From the theoretical approach, researchers discussed the conceptualization of vividness.

Collins et al. (1988) suggested the effect of vividness is illusory and the impacts of vivid information should have no different from pallid ones. They presumed the reason for the null effect is the so-called vividness effect from social inference perspective. The illusory is supposed from two erroneous inferences. One is that vivid presentations are considered more persuasive because it is easier to remember and always perceived as colorful and graphics than pallid ones. Therefore, people assumed the persuasiveness was from the vivid presentations (Taylor & Wood, 1983). The other aspect of the null effects is that the persuasiveness on individual judgments was produced from vivid messages. However, it is hard to say that people's actual attitude changes are the reason for the messages.

Taylor and Thompson (1992) suppose that one considerable reason for reversed vividness effects is the obscure conceptualization of what is vivid (Taylor & Thompson, 1982). There is no generally agreed on conceptual analysis of vividness. Prior studies manipulated concrete language (Burns et al., 1993; Guadagno et al.,

2011; Zhao et al., 2014), picture (Roggeveen et al., 2015; Sunder & Kalayanaraman, 2004), media (McLuhan, 1964; Tote et al., 2019). Similar considerations can be made for other factors. Therefore, here we are facing the problem that the vividness concept is not distinguished well between vivid contents and vivid presentations. A vivid message is supposed to work on recipients' judgment. However, the possibility that all message features, both relevant to judgment and those irrelevant to judgment, were made equally vivid may undermine the persuasiveness of information.

Some of the prior research manipulated persuasive messages through vivid contexts rather than the message itself. The vivid contexts maybe even distracting to the understanding of messages (Taylor & Wood, 1983). When it comes to the persuasiveness of a message, individuals must pay attention to what part of a message, saying the vivid contents or the vivid elements.

For example, as mentioned in §II-3, in Hong et al.'s (2004) study, they examined the influence of flash formats on consumers' attention, consumers' recall of flash, and intentions of revisiting the page in online shopping context. The results show that, compared with non-flashed items, the reaction time of finding a flashed item on the web page is faster. However, the results show the higher recall and revisiting intention in the condition without flashed items. It is considered that although flash could attract consumers' attention, the memory of flash items is not enough for some reason such as less elaboration about the flashed contents.

Following this line, the present research reviewed the manipulation of vivid in prior research and classified what is vivid (See Table 1 & Table 2)⁵.

Referring to the negative effects of vividness, the vivid presentations of messages will occupy individuals' working memory and their resource capacity, thus impeding the processing of the message arguments (Frey & Eagly, 1993). We will discuss this in the Chapter III.

⁵ Since there are many methods to manipulate vividness in experiments, we counted all studies which include vividness manipulations according to the definition of Nisbett and Ross (1980), even if it was not explicitly mentioned in the articles.

Table 1. Vivid information by manipulating message formats

Reference	Manipulation of Vividness(vividness/nonvividness)	Context	Measures	Results	Effects
Roggeveen et al. (2015)	Video, Slide / Static picture	Online shopping	Preference of hedonic products	Consumers prefer to choose hedonic when the product is presented by video or slide.	Positive
Choi and Taylor (2014)	3D/2D picture	Online shopping	online attitude, shopping attitude, product purchase intention, revisit	3D advertisements improve online shopping attitude, product attitude, purchase intention, revisit intention of online shop of consumers.	Positive
van Kerrebroeck et al. (2017)	VR, 3D/2D video	Advertisement	advertisement attitude, brand purchase intention	VR, 3D presentations improve consumers' advertisement attitude, brand attitude, and purchase intention.	Positive
Kim, Baek, and Yoon (2020)	360-degree rotatable image / Static image	Online shopping	Purchase intention	360-degree rotatable product images elicit stronger purchase intention than static product images.	Positive
Sundar and Kalyanaraman (2004)	Fast movement of flash/Slow movement of flash	Web animation ads	Attention, impression of website	Fast-animation ads elicit greater physiological arousal than slow-animation ads. Moreover, a fast-animation ad elicits a greater positive impression of the website when it follows a slow-animation ad.	Positive
Jia et al. (2017)	Proximity of physical distance/Distance of physical distance	Product description	Consumer belief	When consumer get close to product description message, their belief of product implication is increased.	Positive

Hong, Thong, and Tam (2004)	Flash, animated banner/Still banner on websites	Online flash animation	recall	Flash animation banner could attract users' attention, however, there is no significant evidence to support that flash animation banner could increase users recall of the flashed item.	Null
Toet et al. (2019)	Dynamic digital photo frame/Still pictures of food menu	Cinemographs (food digital menu)	wanting(appetitive), liking(affective)	No effect of dynamic images on liking(affective) compared with still images.	Null

Table 2. Vivid information by manipulating message contents

Reference	Manipulation of Vividness (vividness /nonvividness)	Context	Measures	Results	Effects
Burns et al. (1993)	Concrete words / Abstract words	Product description	Ad attitude, brand attitude	Concrete words improve consumers' attitude toward advertisement and brand.	Positive
Collins, Taylor and Wood (1988)	Detailed/No details	News audio	Perceived persuasiveness	Vivid messages are more persuasive than the same messages presented in a less colorful manner. However, vivid messages have no effect on judgments of one's own persuasion or on measures of actual attitude change.	Null
Zhao, Dahl and Hoeffler (2014)	Concrete words / Abstract words	Description of new products	Product evaluation	Consumers evaluate new product positively when read a description of new product which using concrete words (vs. abstract words).	Positive
Frey and Eagle (1993)	Colorful words/ Bland words	Editorial audio record	Recall, recognition, judgments	When a low level of attentional constraint was established by presenting a message to participant in a seemingly incidental manner, vivid messages were less memorable and less persuasive than pallid messages	Negative
Trendel Mazodier and Vohs (2018)	Imagery-evoking text/ Normal text	Misleading advertisement	Implicit attitudes, explicit attitudes	Imagery-based information changed both explicit and implicit attitudes, whereas materials not based on imagery changed only explicit attitudes.	Positive
Petrova and Cialdini (2005)	Imagery verbal/pallid verbal	Product description	Brand attitudes, purchase intention	When the product was depicted in a vivid way, the imagining instructions increased product choice.	Positive
Guadagno Rhoads and Sagarin (2011)	Concrete words / Abstract words	Product description	Attitude	Vivifying noncentral ("ground") features of the message (not the center argument) will decrease people's attitude toward the message.	Negative

II-7 Conclusion of this chapter

Vivid information is considered as attention-getting and imagination exciting of emotionally interesting, concrete and imagery-provoking, and sensory, temporal, or spatial proximity (Nisbett & Ross, 1980). The vividly presented information is always employed as a prominent way to attract consumers' attention. Dynamic formats are widely used as a way to exert vividness effects. However, recent research shows that the physical proximity between consumers and communication messages could exert vividness effects as well (Jia et al., 2017). It seems that vivid messages are more persuasive than pallid messages. However, existing research shows that the persuasiveness of vivid information has no different from pallid information or even has negative impacts on consumers' intentions. The considering reason is that the perception of vivid presentations of messages will occupy individuals' resource capacity, further distracting the comprehension process of information arguments.

III. Load Theory of Attention

Vivid presentations are prominent to attract consumers' attention and result in consumers attending to process the information accordingly. Attention is that "asking possession by the mind, in clear and vivid form, of one out of what may seem several simultaneously possible objects or trains of thought. ... It implies withdrawal from some things in order to deal effectively with others" (James, 2007). It is described as the allocation of limited cognitive processing resources (Oberauer, 2019). This chapter first reviews the concept of attentional resources and the role of attentional resources in consumer cognitive processes. Then, it discusses the principle of the allocation of attentional resources based on the load theory. Finally, it demonstrates the vividness effects from the attentional resource perspective.

III-1. The role of attentional resources in cognitive processes of stimuli

The attentional resources are defined as that "inferred underlying commodity, of limited availability, that enables the performance of a task" (Wickens, 1984, p. 67). There are three attributes of attentional resources. First, as a general resource of cognition, there is a general limit on ones' capacity to perform mental work. That is, the capacity of attentional resources is limited (Kahneman, 1973; Moray, 1967). This general resource is used to process all of the perception and cognition processes. Second, attentional resources are selective. It means attention tasks are classified according to what people require the subject to select (Kahneman, 1973). Third, the attentional resource is divided. When we process multiple tasks, the attentional resources that we allocate to each task is depended on the priority of tasks (Wickens, 1984; 2008).

In fact, we are always processing dual tasks simultaneously. For example, we are like listening to music when walking or driving. On the basis of the above attributes of attentional resources, Wickens (1984), Wickens (2002) and Wickens (2008) suggested the multiple resource theory to explain the structure of attentional resources in dual-task performance. He claims that the types of resources are separated within the general attentional resource pool for multiple tasks.

As figure 2 shows, Wickens (2002) and Wickens (2008) defined attentional resources by four dimensions.

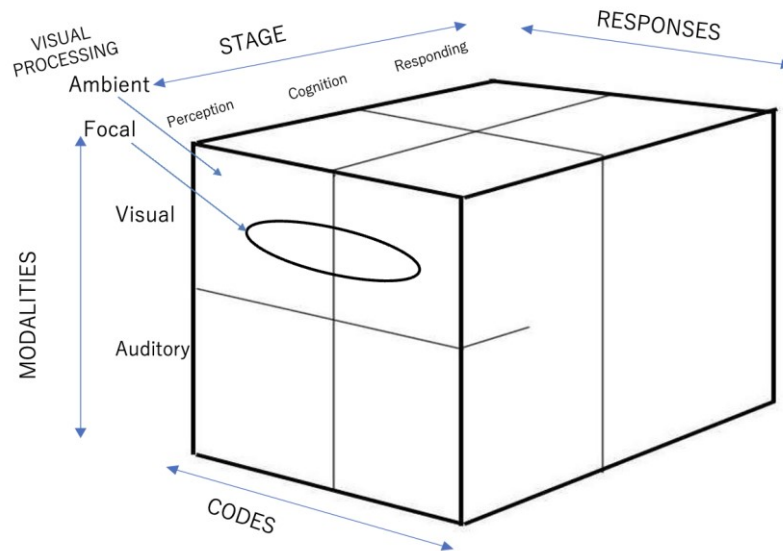


Figure 2. The 4-D metric of attentional resources
(Revised from Wickens, 2002; Wickens, 2008)

The first dimension is the stage of processing. It includes three stages of attentional processing which are perceptual encoding processes of stimuli, central processing which refers to cognitive activities involving working memory, and responding stages. The perceptual stage is related to pre-attentive processing and stimuli encoding. For example, consumers would like to choose which information to put attention to and encode to the next processing stage of cognitive activities. The cognitive activities are related to the elaboration of stimuli such as comprehension of input information, decision making (Rapp & van den Broek, 2005; Wickens, 1984). Although these three stages are the different stages of information processing, they are still consuming the common resources to perform perceptual tasks and cognitive tasks. Thus, all the processes on the three stages will interfere with each other since they are all resource-demanding.

The second dimension is the processing codes which indicate the attentional resources for inputs of spatial and verbal activity. This dimension suggests the difference between spatial (analogue) processes and linguistic/verbal

(categorical/symbolic) processes (Baddeley, 1992; Paivio & Begg, 1971; Wickens, 1984).

The third dimension is the visual channels which identify the focal and ambient vision (Previc, 1998) within visual resources. Focal vision refers to the resources which support the perception and recognition of objects, especially the reading text. Ambient vision refers to all the stimuli entered in visual field and preserving its competency in peripheral vision. It supports the perception of movement.

The fourth dimension is the modalities that indicate the input and response modalities' difference between auditory perception and visual perception. The attentional processing of auditory and visual are separated at the perceptual encoding stage, while they are processed with the common attentional resources at the central processing stage. Finally, respond in manual or vocal reactions by separate modalities (Smith & Buchholz, 1991).

In conclusion, when individuals process dual-task, attentional resources can be separated into different types from four dimensions. Focus on the dimension of the stage of stimuli processing, although resources can be divided into three stages of perception, cognitive to responding processes of stimuli, the attentional resource is a common resource to perform these activities (Kahneman, 1973; Wickens, 1984). There is a chance that the processes of two tasks will interfere with each other since they are both request attentional resources allocation from the common resources. If the process of one task requests more effort, it will hamper the performance of the other task. The priority of tasks determines the allocation of attentional resources (Smith & Buchholz, 1991).

We will discuss the relationship of vividness presentations and attentional resources based on the load theory in the next section.

III-2 The role of attentional resources in vividness effects

Attentional resource plays an essential role in visual information processing. When consumers perceive a vivid message, they only use their limited attentional resources inactive memory to hold the information without processing it for a limited period (Lang, 2006). The importing of new information for judgments inference depends on its favorableness while the usage of attentional resources reached its limit. In detail, the new importing information may enhance, diminish,

or have no effect on judgments to some extent by the favorableness relation of new information and supplanted information.

Some researchers examined the vividness effects within the different attentional conditions. For example, Frey and Eagly (1993) shed light on the role of the constraint of attention. They provided evidence that the constraint of attention may drive vividness effects in either a positive or negative direction. That is, when constraining individuals' attention at a low level, vivid elements in the message interrupted people's reception of the message's meaning. Thus, its persuasiveness was weaker than the pallid message. On the contrary, when individuals' attention was constrained and they were instructed to pay attention to a message, vividness did not impact people's reception of the message, the persuasiveness was no significant difference between a vivid message and a pallid one.

Frey and Eagly (1993) noticed the role of the constraint of attention in vividness effects, however, they didn't mention the limitation of attention as a kind of processing resource. Alternatively, Keller and Block (1997) take attention as a common resource into account. They suggested the vividness effects could either increase or undermine the persuasion to consumers by applying the resource-matching perspective. They first presume that vivid information requests less attentional resources than nonvivid information. In experiment 1, the manipulation of vividness follows the line with Kisielius and Sternthal (1984) that applied pictorial information as a vivid version while word descriptions as a nonvivid version. In experiment 2, the manipulation of vividness is as McGill and Anand (1989) did to introduce experiment participants engage in imagery processing of stimuli in the vivid condition. In experiment 3, the manipulation of vividness is to present word messages with either personal (vivid condition) or impersonal (nonvivid condition) histories of people with HPV as Rook (1987) did. Then, Keller and Block (1997) assume vivid information is more resource-demanding than nonvivid information. With the purpose of making the resource-demanding of vivid information is larger than nonvivid information, the manipulation of vividness is to use concrete words in vivid information and there are 3 messages in the vivid condition. In the nonvivid condition, only 1 message which is composed of abstract words is shown to participants. The main finding of this research shows that when vivid information requests fewer processing resources than nonvivid one,

increasing the allocation of attentional resources to message processing will enhance the persuasion of vivid information first and then reduce it. On the other hand, when the required resource of vivid information is more than nonvivid information, resource allocation was linear, and the vivid information is positively persuasive.

But in this research, the allocation of attentional resources is not manipulated but just measured by self-reporting of participants' perceived vulnerability as the indicator. Keller and Block (1997) defined the range from 1 to 3 of 7-point scale as the low-resource-allocation condition, the range of 4 and 5 of 7-point scale as the moderate-resource-allocation condition, and the range of 6 and 7 of 7-point scale as the high-resource-allocation condition. It's hard to say that such an operation is objective enough. Moreover, this research didn't consider the allocation process of attentional resources. What if individuals don't allocate resources as expected by conditions.

Referring to the conditions which are related to the allocation order of attentional resources, we will discuss this in the next section.

III-3. Perceptual load and the allocation of attentional resources in information processing

There are two approaches to explain how we select information to invest our attention in noisy environments. One is the early-selection approach (Broadbent, 2013). This approach claims that the perception of information is limited since it requires selective attention. Attentional selection happens in the early step of perception. Thus, individuals only process attended stimuli while they don't perceive unattended stimuli. The other one is the late-selection approach (Deutsch & Deutsch, 1963). This approach claims the selection happens late in the process of perception. Individuals perceive all the stimuli in environments and then choose which one to provide the relevant response. An abundance of research discussed these two debate theories for a long time until Lavie and Tsal (1994), Lavie (1995) and Lavie (2005) provide a solution that integrates early-selection theory and late-selection approach by introducing the concept of perceptual load.

Perceptual load is defined as "the amount of information involved in the processing of the task stimuli" (Macdonald & Lavie, 2011). It refers to 1) the

number of stimuli, 2) the amount of information required to process, and 3) the complexity of the physical stimuli, particularly the distractor (peripheral) stimuli.

In the present research, we suppose that the perceptual load via visual could be determined by the physical distance between individuals and stimuli information. When individuals get close to the information, the target information will occupy the main area of visual field. However, when individuals are far from stimuli information, there will be a lot of stimuli which including distractors come into sight. As a result, the perceptual load is lower for a physical proximal stimulus than a distant one.

As mentioned above, we are not equally allocating our attention to every stimulus, when we process multiple stimuli, we allocate our attentional resources differently (Lavie, 1995; Lavie et al., 2004; Lavie & Tsal, 1994). The load theory of attention is supposed according to three basic assumptions. First, attentional resources are limited in capacity (Kahneman, 1973; Moray, 1967). Second, central stimuli are processed before peripheral stimuli (Eriksen & Eriksen, 1974). Third, all of the attentional resources must be used out. This theory explained the processing of central and peripheral stimuli when consumers process multi-stimuli which request attentional resources simultaneously (Lavie et al., 2004).

Prior research suggested that the central stimuli are the ones which related to the current task directly, while the peripheral stimuli are those related to the current task indirectly or irrelevant to the current task (Lavie & De Fockert 2005). When consumers process the information via vision, all the stimuli can be relevant. However, the extent that stimuli are processed is various since the limited attentional resources.

Here, we define the central stimuli as the ones to which consumers would pay more attention. In the information select dimension, the central stimulus is the target information we choose from external environments. In the processing of the target information dimension, the central task is the comprehension of information.

Lavie and Dalton (2014) demonstrated that the attentional capacity is automatically filled by stimuli processing. It means, during the process of information processing, individuals are not only allocating attentional resources to central stimuli but also assigning meanings to peripheral stimuli although these

stimuli are not given high priority. If individuals realize that peripheral stimuli are important, then they will shift their attention to the peripheral stimuli.

The load theory of attention argues that the processing of central and peripheral stimuli depends on the perceptual load and the type of information involved in a task (Lavie & De Fockert, 2005). The theory posits the extent to which the peripheral information element is perceived depends on the perceptual load of the task. A high level of perceptual load will lower the processing of peripheral stimuli (Lavie & De Fockert, 2005; Li et al., 2016). On the other side, the low level of perceptual load leads to the surplus of resource capacity. Since the resources are not completely occupied, the surplus proportion will automatically spill over to the perceptual processing of peripheral stimuli. Such effects of perceptual load on attentional resource allocation are widely discussed in the in-game advertising field. For example, Yoo and Eastin (2017) examined the influence of perception of contextual advertising in games on brand memory. They found that the positive and negative context would consume more resources which leads to less brand memory.

III-4. Conclusion of this chapter

This chapter reviewed the conceptual background of attentional resources. The determination of attentional resource allocation in information processing is related to perceptual load, which states that cognitive and perceptual would affect selective attention.

In the present research, we presume the perceptual load should be varied by the physical distance between consumers and communication messages. Because the volume of stimuli we perceived is vary in different distance conditions.

As above works mentioned, researchers illustrated either the positive or negative impacts of vividness on consumer judgments. However, to the best of our knowledge, no prior research counts the physical distance. The introducing of physical distance which combined with dynamism should support the stable effects of vividness.

IV. Study 1 - The combined effects of dynamic presentations and the physical distance – verbal messages

Verbal messages are widely used in marketing communication. Consumers could form images and positive attitudes toward products based on the verbal description (Childers, Houston, & Heckler, 1985; Jia et al., 2017; Jiang & Wyer, 2009; Kisielius & Sternthall, 1984). Therefore, marketers always use verbal information to communicate with consumers. It is theoretically verified that the verbal messages which depict the characters of goods and services with detailed descriptions are persuasive (Adaval & Wyer, 1998; Burns et al., 1993; Jia et al., 2017), and an image-eliciting advertisement such as "Imagine the summer sea of the resort." may let consumers think about the experience scenes that goods and services offered (Escalas, 2004; Jiang et al., 2014; Kisielius & Sternthall, 1984). In managerial, verbal messages are displayed with either animation effects or just in static formats. In addition, few prior research notices the effects of dynamic verbal information which are accompanied by the physical distance. Therefore, it's necessary to understand the effects of vividly presented verbal information on consumers' intentions. Study 1 examines this issue.

IV-1. Hypothesis development

Along with the development of media technology, the presentation formats of character messages are diversified (Appiah, 2006). Marketers are adding animation effects to text information or making text scroll. Consumers may change their judgments by seeing dynamic presented verbal messages (Klein & Koroghlanian, 2004). Based on prior research, the physical distance between consumers and messages and dynamic formats of messages plays a role in consumers' judgment changes (Jia et al., 2017; Jiang & Wyer, 2009; Roggeveen et al., 2015). Therefore, we assume the combination of these two factors could affect consumers' judgment intentions as well.

In the current research, we adopt the likelihood estimate of products' implications in information description as an indicator of consumers' judgment intentions.

While consumers get close to the verbal message, the message will occupy the main area of eyes. The perceptual load in the proximity condition is low since the

volume of stimuli perceived in their eyes is less than they are far from the message (Macdonald & Lavie, 2011; Lavie, 1995; Lavie & Tsal, 1994). Thus, consumers are available to distinguish which is central (vs. peripheral) stimuli that needed to process. That is, consumers can pick up the target information in their vision from environments. In addition, compared with the static presented information, consumers would put more attentional resources to a dynamic one (Nisbett & Ross, 1980; Strahilevitz & Loewenstein, 1998).

When consumers come across proximal dynamic messages, they are easy to concentrate on the processing of the message so that they would put more attention into the processing of the information (Nisbett & Ross, 1980; Taylor & Fiske, 1978). The proximity to information makes consumers elaborate on what the information described of the product (Jia et al., 2017; Jiang a& Wyer, 2009), and the elaboration of the product attribute gives rise to a visual image (Collins et al., 1988; Jia et al., 2017). The vividness of the images is used to infer the likelihood that the implications of described products are true in turn (Jia et al., 2017).

On the other hand, consumers have to process the continuous phase of perception of dynamism of presentation format and the verbal comprehension task in the interpretation phase of consumer information processing (Peter & Olson, 2009). As previously mentioned, in the proximal low perception load condition, although consumers could distinguish the type of stimuli (central or peripheral), they have to process both central and peripheral stimuli in their vision automatically to use up their attentional resources (Lavie & Dalton, 2014). Thus, there is a chance that we devote much attention to perceiving vivid elements which are used to present information. In addition, the attentional resources are used in all the steps of information processing as a general capacity with selective and divided properties (James, 2007; Moray, 1967; Kahneman, 1973), it is allocated to all the steps of verbal messages processing which including the perception of dynamism, text encoding, memory, and image forming (Lang, 2006). In order to suppress the distraction of dynamism, we will have fewer mental resources to process the information meaning, furtherly, to form the image about the message description. The resource competition of dynamism perception and image forming tasks will undermine the message elaboration (Unnava et al., 1996). Insufficient

understanding of verbal messages finally lowers consumers' evaluation of the products' implication as messages presented.

On the other hand, when consumers come across proximal static messages, they will devote more attention to them since the messages are close to them. In the condition that messages are displayed in static formats, there is no resource competition from the perception of vivid presentations. Thus, consumers should elaborate the messages enough to form a higher judgment intention of products implication.

In summary, when consumers see a dynamic verbal message in front of their eyes, their likelihood estimate of products should be lower than when they see a static one. Therefore,

H1a. Consumers will evaluate the implication of the product is *less likely* when they see a dynamic verbal description of the product when *close to* it.

On the contrary, when consumers get further from verbal messages, dynamic presentations could catch ones' attention in chaotic environments (Peter and Olsen, 2009; Roggeveen et al., 2015). Consumers would like to put more attentional resources into vivid dynamic presented information (Nisbett & Ross, 1980; Taylor & Fiske, 1978). However, with the increasing volume of stimuli perceived by vision, the perception load becomes higher too. Here, the high level of perception load leads consumers to ignore peripheral stimuli in the environment and the peripheral cues of the message itself such as dynamism (Lavie & Dalton, 2014). It means consumers are able to ignore distracting information from environments and devote more attentional resources to do the message comprehension task. The elaboration of verbal information leads consumers to judge the implication of products is more likely as message description.

On the other hand, because a static message can't drag consumers' attention (it also could be considered as no resource consumption by static messages), consumers always have additional resources to process all information in external environments, no matter it is central or peripheral. Moreover, when consumers see distal static verbal information, there is no signal to help them to recognize which is the central stimulus to process. They have to process all the information in the

environment first and then distinguish the type of information (Lavie & De Focker, 2005). Although they make it clear which one is the central information needed to process, the additional resource spilled over in this condition makes consumers also process stimuli that are irrelevant to the target messages. The processing of irrelevant stimuli will make the elaboration of central stimuli insufficient. Hence, consumers will not evaluate the likelihood of products positively in this condition.

To sum up, when consumers see a dynamic verbal message far from them, their intentions should be higher than when they see a static one. Therefore,

H1b. Consumers will evaluate the implication of the product is *more likely* when they see a dynamic verbal description of the product when *far from* it.

In line with the prior research, since vivid messages are more interesting than nonvivid messages, consumers are more likely to elaborate encoding processes for such information (Nisbett & Ross, 1980). To the extent of presentation formats, it attracts recipients' more attention to engage the elaboration of the experience of using the products (Jiang & Benbasat, 2007). Furthermore, consumers will show higher purchase intentions when they see dynamic messages rather than static ones (Roggeveen et al., 2015). However, when people get close to messages, the low perceptual load (Lavie, 1995, Lavie & Tsal, 1994) result in the processes of all stimuli in the environment and all the cues of messages no matter they are central or peripheral. Thus, compared with static presented messages, the perception of dynamic messages (i.e., a message shown with rolling words) will compete for resources with the comprehension process of messages. Hence, letting people break away from engaging in elaboration.

In conclusion, although a proximal dynamic presentation is more attractive for consumers, the distraction of the combination of vivid elements thereby lowers their intentions to message description, which reflects in their purchase intentions (Fennis et al., 2011; Kim et al., 2020). Therefore,

H2a. Consumers will show *lower purchase intention* of the product when they see a dynamic verbal description of the product when *close to* it.

On the contrary, when consumers are far from verbal information, their perceptual load is at a high level (Lavie, 1995; Lavie & Tsal, 1994). The dynamism of information could catch consumers' attention to process effectively for its conspicuousness (Peter & Olson, 2009). In the task of verbal information processing, consumers put more attentional resources to comprehend the meaning of the information in this condition of high perceptual load. That is, although the perception of the peripheral dynamism cues shares the common resources with the comprehension process, consumers would perform the comprehension first (Lavie, 1995; Lavie & Tsal, 1994; Simola, Hyönä, & Kuisma, 2014). Thus, compared with static information, a sufficient understanding of the dynamic verbal information results in favorable behavior intentions toward products, which reflects in their purchase intentions. Therefore,

H2b. Consumers will show *higher purchase intention* of the product when they see a dynamic verbal description of the product when *far from* it.

As stated above, as an attribute of vivid information, it could evoke visual imagery which formed on the basis of the information (Collins et al., 1988; Jia et al., 2017). In addition, the concrete verbal description leads consumers to form mental imagery in their minds (D'Angiulli et al., 2013; Jia et al., 2017). Prior research demonstrated that mental imagery evoked by concrete verbal in advertising increases the elaboration of information and purchase intentions of consumers (Burns et al., 1993). Therefore,

H3. Mental imagery mediates the combined effect of physical distance (proximity vs. distance) and presentation formats (dynamic vs. static) on consumers' intentions.

IV-2 Method

Participants and design. This experiment was carried out on the research website Yahoo! Japan Crowd Sourcing. Two hundred and three participants were recruited. The gender and age of participants were not controlled. In detail, forty-nine (24%) of them are female, the average age is forty-seven. These participants were

randomly assigned to cells of 2 (presentation formats: dynamic vs. static) \times 2 (physical distance condition: proximity vs. distance) between-subjects design.

Table 3. Participants attributes of Study 1-main study

Gender (n=203)	Male	154(76%)	Age (n=203)	~19	3(1.48%)
				20~29	4(1.97%)
				30~39	28(13.79%)
	Female	49(24%)		40~49	81(39.9%)
				50~59	56(27.57%)
				60~	31(15.27%)

Stimulus and procedure. This experiment was developed from the study of Jia et al. (2017) and employed a fictitious jelly named Super Jelly. The reason is that jelly is convenient good that we have a big chance to buy in our daily life. It is close to our real purchase experience and easy for participants to evaluate even without much knowledge about it.

First, participants read a general instruction about this experiment. In order to prevent them from being aware that this is an experiment, the following scenario is designed.

“This research is to illustrate consumer behavior to a new product. Collected data will be just used for static analysis and marketing research. Privacy information is protected; please feel free to answer the following questions. A food maker is pondering to promote functional food which includes L-Theanine to Japan market. L-Theanine is a kind of amino acid that is rich in tea. Please refer to the following product instruction and answer subsequent issues.”

Then, they saw a conference room composed of several rows of seats. We employed a conference room because this experiment is directly carried out on the website Yahoo! Crowd Sourcing. Predictably participants’ age distribution and career are various. Moreover, this experiment is illustrated as market research to understand consumer behavior to a new product that will release to the local market. Therefore, a conference room is considered a proper circumstance here.

In front of the room, there was a screen showing a verbal description of Super Jelly. The stimulus picture showed either far from or close to the front screen. In the proximal condition, the picture showed the sight of the third row of seats. In contrast, in the distant condition, the picture showed the sight of the fifth row of seats. In each condition, there was either a dynamic version or a static presentation format showing the instruction of Super Jelly as below. “Super Jelly, only with one, reducing fatigue and sleepiness when you wake up in the morning. Rich L-theanine, Improving sleep quality, Effective in clinical tests, Favorable comments from experiencers.” The showing time was set consistently across conditions as 36s. For instance, dynamic formats were looped three times for total 36s, while static formats were directly showing for 36s. (see Appendix A)

Finally, participants answered a questionnaire setting about mental imagery, consumers’ intention of the likelihood estimate of the product implication, and consumers’ purchase intention.

Measurements. Judgment intention is measured by the likelihood estimate as an indicator. It is the extent that consumers think the implication of the product is possible. Measurements are developed from the studies of Jia et al. (2017), which include five questions of “How possible do you think the jelly would function as well as the description claims? (1=very impossible, 7=very possible)”; “Please estimate an approximate range of likelihood that the jelly would reduce the fatigue and sleepiness when you wake up in the morning. (1=<10%, 7=>90%)”; “How probable do you think the product would really help you reduce the fatigue and sleepiness when you wake up in the morning? (1=very improbable, 7=very probable)”; “How likely do you think the product is effective in helping you reduce the fatigue and sleepiness when you wake up in the morning? (1=very unlikely, 7=very likely)”; and “How do you think about super jelly? (1=very inefficacious, 7=very efficacious)” ($\alpha=.958$).

A set of questions about purchase intention was developed from Spears and Singh (2004), which measured along a 7-point scale from 1 (not at all) to 7 (very much). For instance, it includes “How possible would you buy Super Jelly as the way to ease up fatigue and sleepiness?”; and “To what extent that you would buy the jelly which described in the prior verbal message?” ($r=.964$).

The measurement of mental imagery was developed from the studies of Jia et al. (2017). Four questions were measured along a 7-point scale from 1 (not at all) to 7 (very much), which include “How vividly could you imagine the jelly being effective in reducing fatigue and sleepiness when you wake up in the morning?”; “How clearly could you imagine the jelly working to reduce fatigue and sleepiness when you wake up in the morning?”; “To what extent did the images that the jelly reduced fatigue and sleepiness when you wake up in the morning come to mind?”; and “ How many images that the product will reduce fatigue and sleepiness when you wake up in the morning?” ($\alpha=.946$).

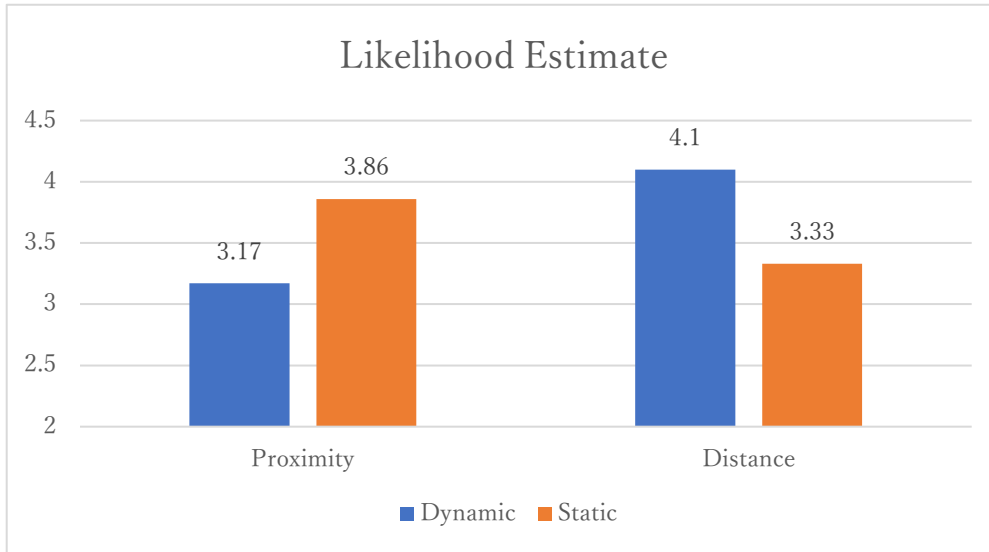
The fluency of information processing may also influence the impact of a persuasive message (Winkielman, Schwarz, & Fazendeiro, 2003). In order to exclude this probability, we asked participants to report how difficult it was to comprehend the product information presented from 1 (not at all) to 7 (very much).

IV-3. Results

Manipulation Checks. Participants reported a closer distance between the last row of seats and the screen in the front of the conference room in the physical proximal condition ($M=3.88$, $SD=.848$) than those who in the distant condition ($M=4.75$, $SD=.856$; $F(1, 201)=52.982$, $p<.001$, $\eta_p^2=.209$). Therefore, the manipulation of physical distance is successful.

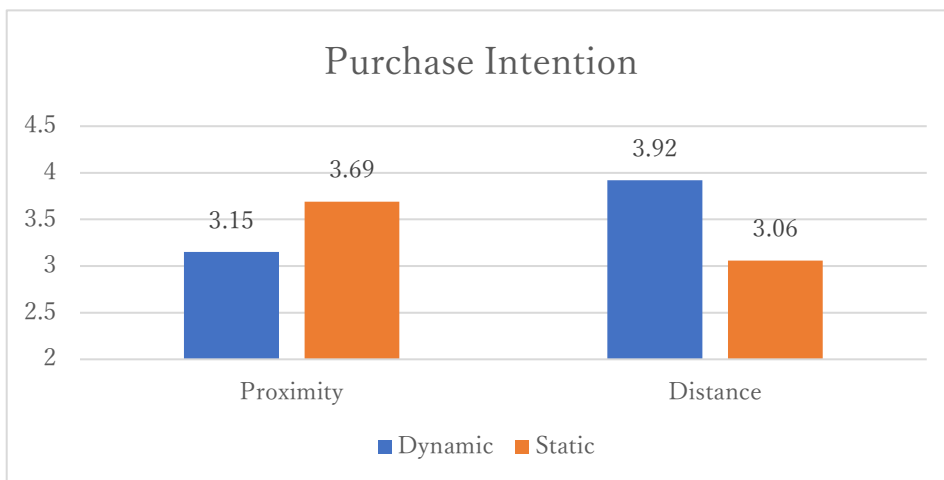
Likelihood Estimate. An analysis on consumers’ judgment intention of likelihood estimate showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p>.838$). The interaction between presentation format and proximity condition was significant ($F(1, 199)=23.297$, $p<.001$, $\eta_p^2=.105$). As expected, in the physical proximal condition, participants reported a higher probability that Super Jelly will be valid to release fatigue and sleepy when they saw the static format ($M=3.86$, $SD=1.07$) than when they saw the dynamic format ($M=3.17$, $SD=1.01$; $F(1,199)=10.111$, $p<.01$, $\eta_p^2=.048$). In the physical distant condition, the result was reversed ($M_{static}=3.33$, $SD_{static}=1.16$; $M_{dynamic}=4.10$, $SD_{dynamic}=1.04$; $F(1,199)=13.341$, $p<.001$, $\eta_p^2=.063$). Thus, H1a and H1b were supported.

Figure 3. The result of likelihood estimate of Study 1-Main Study



Purchase Intention. An analysis on participants' purchase intention showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p > .858$). The interaction between presentation format and proximity condition was significant ($F(1, 199) = 16.308, p < .001, \eta_p^2 = .076$). As expected, in the physical proximal condition, participants would buy the jelly more when they saw the static format ($M = 3.69, SD = 1.15$) than when they saw the dynamic format ($M = 3.15, SD = 1.13; F(1, 199) = 4.754, p < .05, \eta_p^2 = .023$). In the physical distant condition, the result was reversed ($M_{static} = 3.06, SD_{static} = 1.29; M_{dynamic} = 3.92, SD_{dynamic} = 1.32; F(1, 199) = 12.588, p < .001, \eta_p^2 = .059$). Therefore, H2a and H2b were supported.

Figure 4. The result of purchase intention of Study 1-Main Study



Mental Imagery. An analysis on participants' mental imagery showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p > .844$). The interaction between presentation format and proximity condition was significant ($F(1, 199) = 15.547, p < .001, \eta_p^2 = .072$). As expected, in the physical proximal condition, participants' images of super jelly that formed from the message were more vivid when they saw the static format ($M = 3.96, SD = 1.14$) than when they saw the dynamic format ($M = 3.48, SD = 1.07; F(1, 199) = 4.752, p < .05, \eta_p^2 = .023$). Moreover, in the physical distant condition, the result was reversed ($M_{static} = 3.50, SD_{static} = 1.12; M_{dynamic} = 4.23, SD_{dynamic} = 1.02; F(1, 199) = 11.641, p < .01, \eta_p^2 = .055$).

Figure 5. The result of mental imagery of Study 1-Main Study

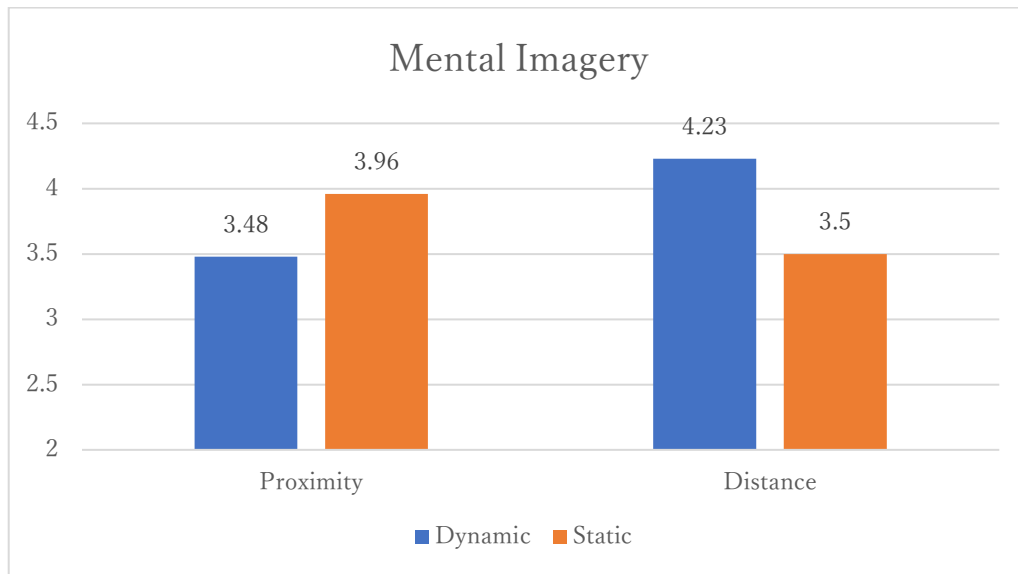


Table 4. The results of Study 1 - Main Study

	Proximity			Distance			Interaction
	Dynamic (n=49)	Static (n=50)	Sig.	Dynamic (n=52)	Static (n=52)	Sig.	
Likelihood Estimate	3.17 (1.01)**	3.86 (1.07)**	$F(1,199) = 10.111; p < .01; \eta_p^2 = .048$	4.10 (1.04)***	3.33 (1.16)***	$F(1,199) = 13.341; p < .001; \eta_p^2 = .063$	$F(1,199) = 23.297; p < .001; \eta_p^2 = .105$
Purchase Intention	3.15 (1.13)*	3.69 (1.15)*	$F(1,199) = 4.754; p < .05; \eta_p^2 = .023$	3.92 (1.32)***	3.06 (1.29)***	$F(1,199) = 12.588; p < .001; \eta_p^2 = .059$	$F(1,199) = 16.308; p < .001; \eta_p^2 = .076$
Mental Imagery	3.48 (1.07)*	3.96 (1.14)*	$F(1,199) = 4.752; p < .05; \eta_p^2 = .023$	4.23 (1.02)**	3.50 (1.12)**	$F(1,199) = 11.641; p < .01; \eta_p^2 = .055$	$F(1,199) = 15.547; p < .001; \eta_p^2 = .072$

Note. SDs are indicated in parentheses. * $p < .05$, ** $p < .01$, *** $p < .001$

Fluency. Based on the provided information, participants' difficulty in evaluating the production was not significantly different in close and distant conditions

($M_{\text{proximity}}=3.99$ vs. $M_{\text{distance}}=3.91$, $p=.741$ respectively ns.; $F<1$). Therefore, processing fluency did not influence the effect of physical proximity and presentation format on ones' judgment.

Mediation analyses. We predicted that the interaction effect of physical distance and information presentation formats would lead to the different levels of mental imagery, which in turn would influence the effects of information. A mediated moderation analysis (Hayes, 2017; Model 8; Bootstrap 5000 resamples) indicated that the impact of physical distance \times presentation formats on participants' judgment intention of the product was mediated by the mental imagery they could form ($B=.78$, $SE=.04$; $95\%CI= .69$ to $.86$). Specifically, the indirect effect of mental imagery was significant both in the proximal condition ($B=.59$, $SE=.17$; $95\%CI=.26$ to $.93$) and in the distal condition ($B=-.35$, $SE=.24$; $95\%CI=-.69$ to $-.47$).

Moreover, a mediated moderation analysis (Hayes, 2017; Model 8; Bootstrap 5000 resamples) indicated that the impact of physical distance \times presentation formats on participants' purchase intention of the product was mediated by the mental imagery they could form ($B=.75$, $SE=.06$; $95\%CI= .63$ to $.87$). Specifically, the indirect effect of mental imagery was significant both in the proximal condition ($B=.56$, $SE=.17$; $95\%CI=.25$ to $.92$) and in the distal condition ($B=-.34$, $SE=.17$; $95\%CI=-.68$ to $-.01$). Therefore, H3 was supported.

IV-4 Supplementary Study

The main study of study 1 was designed according to our real experience that when we are close to a message, the font size looks larger than we are far from it. However, in experimental conditions, the influence of the character font size was called into question. What if participants who were assigned into the distant condition felt the font size was not large enough so that it was difficult to comprehend messages.

The ease of message processing also influences its persuasiveness (Lee, Keller, & Sternthal, 2009). That is, if participants find it is not very easy when they read the displayed stimulus material, they might not elaborate on the message accordingly. In order to exclude this possibility, the font was conveyed sufficiently large, and the font size was consistent across conditions in this supplementary experiment.

IV-4-1 Method

Participants and design. This experiment was carried out on the research website Yahoo! Japan Crowd Sourcing. Two hundred and forty-three participants were recruited. Gender and age of participants were not controlled. In detail, seventy-four of them are female (30%), the average age is forty-five. These participants were randomly assigned to cells of 2 (presentation format: dynamic vs. static) × 2 (proximity condition: proximity vs. distance) between-subjects design.

Table 5. Participants attributes of Study 1 – Supplementary Study

Gender (n=243)	Male	169(70%)	Age (n=243)	20~29	21(9.86%)	
					30~39	47(19.34%)
					40~49	93(38.27%)
	Female	74(30%)			50~59	54(22.22%)
					60~	28(10.31%)

Material and procedure. The stimuli materials and procedure were the same with the main study except for the font size of the message that was congruent across all conditions (see Appendix B).

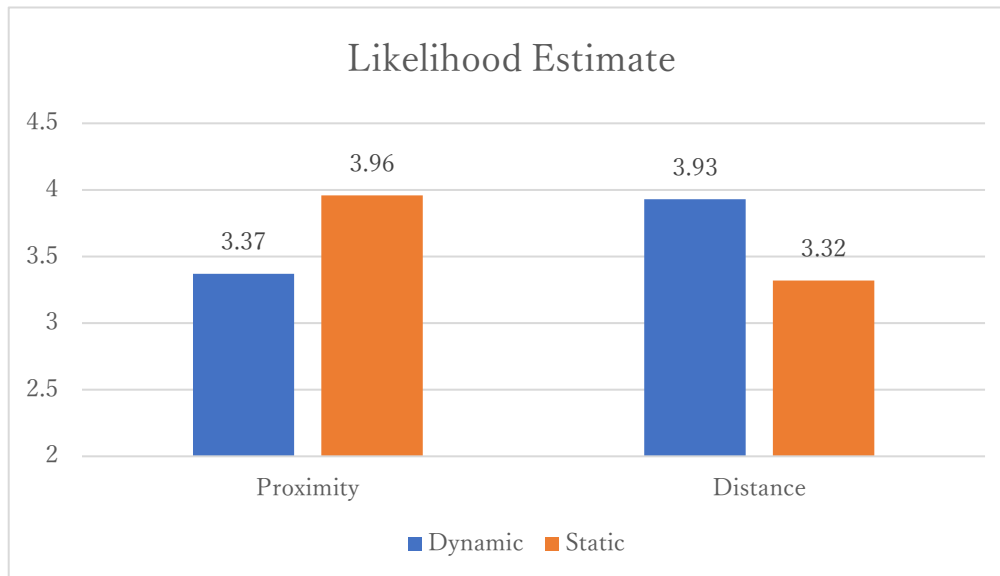
In each condition, after reading the experiment instruction, participants saw the picture of the conference room and the description of “Super Jelly”. Then they reported judgment intention of likelihood estimate that this jelly could release participants from fatigue and sleepiness by three questions ($\alpha=.945$), purchase intention, and mental imagery vividness by three questions ($\alpha=.963$) along with the same scales in the main experiment. Finally, they reported how difficult it was to comprehend the product information presented from 1 (not at all) to 7 (very much).

IV-4-2 Results

Likelihood Estimate. An analysis on judgment intention of likelihood estimate showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p>.95$). The interaction between presentation format and proximity condition was significant ($F(1, 239)=20.57, p<.001, \eta_p^2=.075$). As expected, in the physical proximal condition, participants reported a higher probability that Super Jelly will be valid to release fatigue and sleepy when they

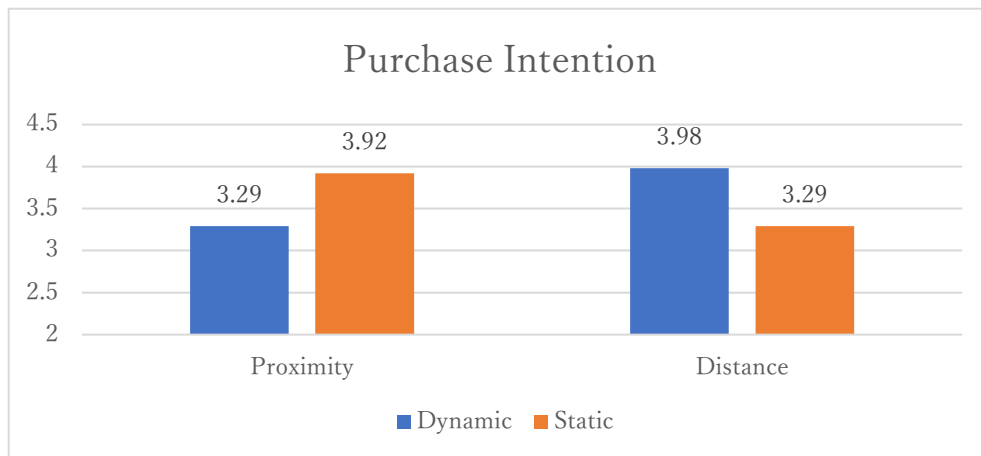
saw the static format ($M=3.96$, $SD=.82$) than when they saw the dynamic format ($M=3.37$, $SD=1.06$; $F(1,239)=9.49$, $p<.01$, $\eta_p^2=.038$). In the physical distant condition, the result was reversed ($M_{static}=3.32$, $SD_{static}=1.09$; $M_{dynamic}=3.93$, $SD_{dynamic}=1.1$; $F(1,239)=11.142$, $p<.01$, $\eta_p^2=.045$).

Figure 6. The result of likelihood estimate of Study 1-Supplementary Study



Purchase Intention. An analysis on participants' purchase intention showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p>.96$). The interaction between presentation format and proximity condition was significant ($F(1, 239)=15.663$, $p<.001$, $\eta_p^2=.062$). As expected, in the physical proximal condition, participants would buy the jelly more when they saw the static format ($M=3.92$, $SD=1.29$) than when they saw the dynamic format ($M=3.29$, $SD=1.49$; $F(1,239)=6.776$, $p<.05$, $\eta_p^2=.028$). In the physical distant condition, the result was reversed ($M_{static}=3.29$, $SD_{static}=1.20$; $M_{dynamic}=3.98$, $SD_{dynamic}=1.22$; $F(1,239)=9.001$, $p<.01$, $\eta_p^2=.036$).

Figure 7. The result of purchase intention of Study 1-Supplementary Study



Mental Imagery. An analysis on participants' mental imagery showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p > .92$). The interaction between presentation format and proximity condition was significant ($F(1, 239) = 25.128, p < .001, \eta_p^2 = .095$). As expected, in the physical proximal condition, participants' images of super jelly that formed from the message were more vivid when they saw the static format ($M = 3.85, SD = 1.26$) than when they saw the dynamic format ($M = 3.14, SD = 1.25; F(1, 239) = 9.518, p < .01, \eta_p^2 = .038$). However, in the physical distant condition, the result was not significant ($M_{\text{static}} = 3.08, SD_{\text{static}} = 1.21; M_{\text{dynamic}} = 3.97, SD_{\text{dynamic}} = 1.25; F(1, 239) = 16.147, p < .001, \eta_p^2 = .063$).

Figure 8. The result of mental imagery of Study 1-Supplementary Study

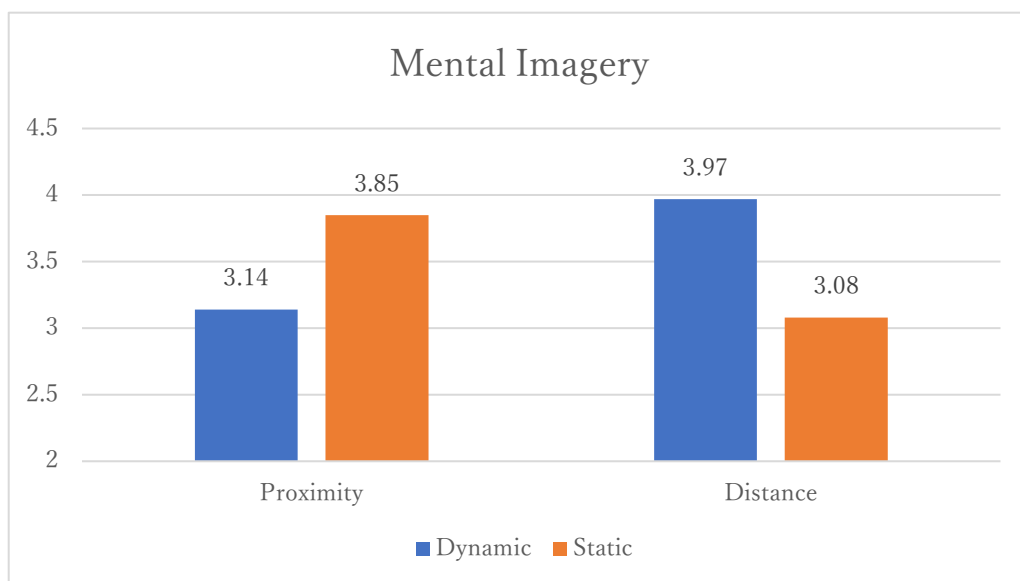


Table 6. Results of Study 1- Supplementary Study

	Proximity			Distance			Interaction
	Dynamic (n=58)	Static (n=60)	Sig.	Dynamic (n=62)	Static (n=63)	Sig.	
Likelihood Estimate	3.37 (1.06)**	3.96 (.82)**	F(1,239)=9.49; p<.01; η_p^2 =.038	3.93 (1.1)**	3.32 (1.09)**	F(1,239)=11.142; p<.01; η_p^2 =.045	F(1,239)=20.57; p<.001; η_p^2 =.075
Purchase Intention	3.29 (1.49)*	3.92 (1.29)*	F(1,239)=6.776; p<.05; η_p^2 =.028	3.98 (1.22)**	3.29 (1.20)**	F(1,239)=9.001; p<.01; η_p^2 =.036	F(1,239)=15.663; p<.001; η_p^2 =.062
Mental Imagery	3.14 (1.25)**	3.85 (1.26)**	F(1,239)=9.518; p<.01; η_p^2 =.038	3.97 (1.25)***	3.08 (1.21)***	F(1,239)=16.147; p<.001; η_p^2 =.063	F(1,239)=25.128; p<.001; η_p^2 =.095

Note. SDs are indicated in parentheses. *p<.05, **p<.01, ***p<.001

Fluency. Based on the provided information, participants' difficulty in evaluating the production was not significantly different in close and distant conditions ($M_{\text{proximity}}=4.17$ vs. $M_{\text{distance}}=4.22$, $p=.787$ respectively ns.; $F<1$). Therefore, processing fluency did not influence the effect of physical proximity and presentation format on ones' judgment.

Mediation analyses. The mediated effect of mental imagery is also analyzed in this supplementary study. A mediated moderation analysis (Hayes, 2017; Model 8; Bootstrap 5000 resamples) indicated that the impact of physical distance \times presentation formats on participants' judgment intention of the product was mediated by the mental imagery they could form ($B=.57$, $SE=.04$; 95%CI= .50 to .65). Specifically, the indirect effect of mental imagery was significant both in the proximal condition ($B=.47$, $SE=.14$; 95%CI=.21 to .75) and in the distal condition ($B=-.44$, $SE=.13$; 95%CI=-.71 to-.19).

Moreover, a mediated moderation analysis (Hayes, 2017; Model 8; Bootstrap 5000 resamples) indicated that the impact of physical distance \times presentation formats on participants' purchase intention of the product was mediated by the mental imagery they could form ($B=.55$, $SE=.06$; 95%CI= .44 to .67). Specifically, the indirect effect of mental imagery was significant both in the proximal condition ($B=.46$, $SE=.14$; 95%CI=.21 to .74) and in the distal condition ($B=-.43$, $SE=.13$; 95%CI=-.70 to-.17).

IV-5 Discussion

Both the main study and the supplementary study indicated the interactive effect of the dynamic presentation format of the product description and the physical distance between individuals and the message. In both experiments, we

distinguished “what is vivid”. We indeed kept the contents of the message consistently, but just differed the display formats. In the main study, we simulated our real experience that the font size of text looks larger when we are close to the text and differed the font size in different physical distances. In order to exclude the alternative explanation of the effects exerted by font size, we kept the font size constant both in the proximal condition and the distant condition. The results were the same as the main study. Therefore, we suggested that when it comes to verbal information, combining two vivid elements could negatively influence consumers’ intentions.

V. Study 2- The role of attentional resource in combined effects of 2 vivid elements on consumer behavior-verbal message

Study1 demonstrated the initial influence of the combination of dynamic (vs. static) presentations and physical proximity (vs. distance). We presumed that the different influence of the combination is determined by the allocation of attentional resources between perceptual activity and information comprehension.

When a message is displayed in a proximal dynamic format, it may draw consumers' attention and distract them from message processing. Consequently, consumers considered the implication of products is less likely and their purchase intention is low. However, what if the attentional resources are not enough for either activity in consumer information processes, will the effects of the combined vivid factors be different. By the continuing consumption of attentional resources, the process of both vivid formats and the comprehension task will overload consumers' capacity span, therefore, the impact of dynamic presentation is no different from the static one in both proximal conditions and distal conditions. Study 2 evaluates this assumption.

V-1. Hypothesis Development

If we equalize the processing of both vivid and pallid presentation of the same message sufficiently, the persuasiveness will have no difference between the two formats (Frey & Eagly, 1993). However, contrasting with pallid presentations, vivid presentations sometimes restraint our attention to process message contents.

It is supposed that there is a limitation on people's capacity to perform mental work and process information (Moray, 1967; Lang, 2006). People use their limited cognitive resources to execute perceiving, encoding, understanding, and remembering the work of objects (Lang, 2006). Levie and Tsal (1994) suggested that although there is a limited capacity for perception, people still automatically execute perception proceeds. When people are required to do a linguistic process while visually input it by motioned words, they use a common source of attention to do both words perception and linguistic judgment work. However, these two actions are on different psychological processes. The interdependent relationship

between these two actions results in different processing levels of them. The extent that people process irrelevant motion depends on the consumption of attentional capacity that people used for linguistic work. That is, if the cognitive load of processing the main task, saying message contents tired out people’s available capacity, the irrelevant motioned stimuli will not be perceived. (Rees, Frith, & Lavie, 1997). The exhausting attentional resources need to process distractors reduce the interference of distractors (Minamoto et al., 2015).

In conclusion, by exhausting individuals’ attentional resources, they will be more concentrated on the central task of information comprehension. That is, if the consumption of consumers’ attentional resources is increasing, they will be more concentrated on elaborating the message contents rather than the perception of dynamism for proximal information. Furthermore, consumers have no more resources spilling over to perceive peripheral stimuli in environments when they see physically distant information presented by static formats. Therefore,

H4. With *higher* consumption of consumers’ attentional resources, the impact of dynamic presentation and static presentation is no different on consumers’ intentions in either proximal condition or distal condition.

V-2. Method

Participants and design. This experiment was carried out on the research website Yahoo! Japan Crowd Sourcing. Eight hundred and forty-five participants were recruited. The gender and age of participants were not controlled. In detail, two hundred sixty of them are female (31%), the average age is forty-six. These participants were randomly assigned to cells of 2 (presentation formats: dynamic vs. static) x 2 (proximity condition: proximity vs. distance) x 2 (attentional load: high vs. low) between-subjects design.

Table 7. participants attributes of Study 2

Gender (n=845)	Female	585(69%)	Age (n=845)	~19	7(0.83%)
				20~29	41(4.85%)
				30~39	137(16.21%)
	Male	260(31%)		40~49	273(32.31%)
				50~59	266(31.48%)
				60~	121(14.32%)

Participants first read the experiment instruction. The experiment was introduced as the evaluation of a newly released product and the role of concentration in the product evaluation process. After that, they were randomly assigned to either the high or low attentional load condition. Participants in the high attentional load condition were asked to memorize an 8-digit number, while participants in the low attentional load condition were asked to memorize a 2-digit number (Jia et al., 2017). The memorizing time in two conditions was identified as 20s. In order to exclusive the possibility that participants memo the numbers with tools, we requested them not to use tools to write a memo when they memorize the numbers and set a check question of this issue.

Then, they were randomly assigned to one of four cells such as proximal × dynamic, proximal × static, distant × dynamic, distant × static which are the same as the main experiment in Study 1. After seeing the information of “Super Jelly”, participants reported the numbers they memorized previously. Moreover, they reported whether they have written down the number with paper or mobile phones when they memorized the numbers.

Finally, they answered a set of questionnaires. Manipulation of distance was checked by “How far is the last row of the seats from the screen. (1=very close, 7=very far)” (Thomas & Tsai, 2011) Manipulation of attention consumption was checked by two questions of how difficult and how distracted they felt when they evaluated the product (1=not at all, 7=very much) ($r=.607$) (Jia et al., 2017). Consumers’ judgment intention is measured by the likelihood estimate as an indicator. Participants evaluated the likelihood estimate that this jelly could release them from fatigue and sleepiness by “Please estimate an approximate range of likelihood that t Super Jelly may relax your feeling of fatigue and sleepy? (1=<10%, 7=>90%)”, “How probable do you think the product would really help you relax your feeling of fatigue and sleepy? (1=very improbable, 7=very probable)”, “How likely do you think the product is effective in helping you release from fatigue and sleepy? (1=very unlikely, 7=very likely)” and “How do you think about Super Jelly? (1=no effect at all, 7=very useful)” ($\alpha=.954$).

At last, A set of questions about consumers’ purchase intention was developed from Spears and Singh (2004), which measured along a 7-point scale from 1 (not at all) to 7 (very much). For instance, it includes “How possible would you buy

Super Jelly as the way to ease up fatigue and sleepiness?"; and "To what extent that you would buy the jelly which described in the prior verbal message?" ($\alpha=.958$).

V-3. Results

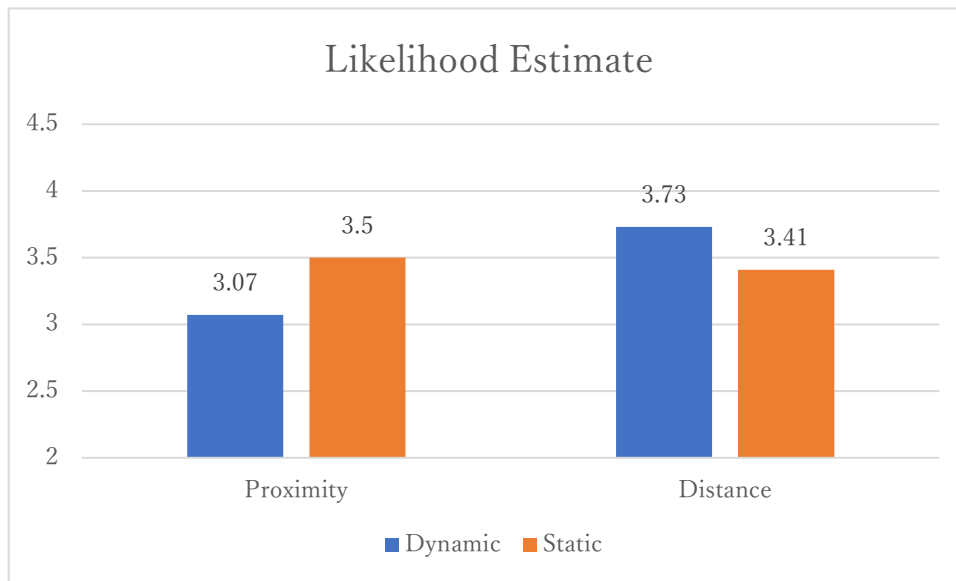
Manipulation Check. Physical Distance. Participants reported a closer distance between the last row of seats and the screen in the front of the conference room in proximal condition ($M=3.86$, $SD=.91$) than those who in the distant condition ($M=4.54$, $SD=.96$; $F(1,843)=112.12$ $p<.001$, $\eta_p^2=.117$).

Attentional Load. Participants felt it was more difficult and disturbed when they evaluated the product in the high attentional load condition ($M=3.41$, $SD=1.44$) than in the low attentional load condition ($M=2.98$, $SD=1.27$; $F(1,843)=21.383$, $p<.001$ $\eta_p^2=.025$).

Likelihood Estimate. A three-way ANOVA analysis on judgement intention of likelihood estimate showed that the three-way interaction between presentation format, proximity condition, and the attentional load was significant ($F(1, 837)=12.239$, $p<.001$, $\eta_p^2=.014$). Specifically, when the attentional load is low, the interaction of presentation formats and the proximity condition was significant ($F(1, 865)=11.703$, $p<.01$, $\eta_p^2=.013$). As the result in Study 1, it is respectively that participants felt super jelly was more effective when they saw the proximal static presentation formats ($M=3.50$, $SD=1.18$) than the proximal dynamic ones ($M=3.07$, $SD=1.08$; $F(1,408)=7.858$, $p<.01$, $\eta_p^2=.019$). In contrast, when participants saw the product description far from it, their likelihood estimate was higher they saw the dynamic format ($M=3.73$, $SD=1.03$) than when they saw the static format ($M=3.41$, $SD=1.08$; $F(1,408)=4.206$, $p<.05$, $\eta_p^2=.010$).

As respectively, when participants depleted their attentional resources, the interaction of presentation formats and the proximity condition was not significant ($p>.1$). That is, when consumers' attentional resource is exhausted, the impacts of presentation formats have no difference in either proximal physical distance or distal physical distance.

Figure 9. The result of likelihood estimate of Study 2-proximity condition



Purchase intention. A three-way ANOVA analysis on participants' purchase intention showed that the three-way interaction between presentation format, proximity condition, and attentional load was significant ($F(1, 837)=9.085$, $p<.01$, $\eta_p^2=.011$). Specifically, when the attentional load is low, the interaction of presentation formats and the proximity condition was significant ($F(1, 865)=15.866$, $p<.001$, $\eta_p^2=.018$). As the result in Study 1, it is respectively that participants would like to buy super jelly more when they saw the proximal static presentation formats ($M=3.48$, $SD=1.35$) than the proximal dynamic ones ($M=2.89$, $SD=1.30$; $F(1,408)=9.59$, $p<.01$, $\eta_p^2=.002$). In contrast, when participants saw the product description far from it, their purchase intention was higher they saw the dynamic format ($M=3.58$, $SD=1.32$) than when they saw the static format ($M=3.09$, $SD=1.24$; $F(1,408)=7.429$, $p<.01$, $\eta_p^2=.007$).

As respectively, when participants depleted their attentional resources, the interaction of presentation formats and the proximity condition was not significant ($p>.1$). That is, when consumers' attentional resource is exhausted, the impacts of presentation formats have no difference in either proximal physical distance or distal physical distance. Therefore, H4 was supported.

Figure 10. The result of purchase intention of Study 2-proximity condition

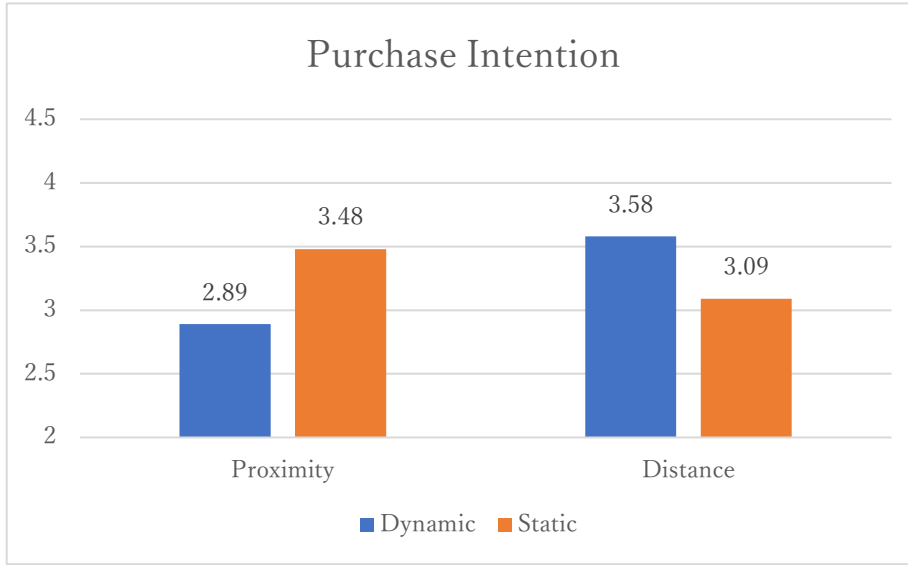


Table 8. the results in the low attentional resource condition of Study 2

	Low attentional load						Interaction
	Proximal			Distant			
	Dynamic(N=65)	Static(N=67)	Sig	Dynamic(N=68)	Static(N=72)	Sig	
Likelihood Estimate	3.07(1.08)**	3.50(1.18)**	F(1,408)=7.858, p<.01, $\eta_p^2=.019$	3.73(1.03)*	3.41(1.08)*	F(1,408)=4.206, p<.05, $\eta_p^2=.010$	F(1, 865)=11.703, p<.01, $\eta_p^2=.013$
Purchase Intention	2.89(1.30)**	3.48(1.35)**	F(1,408)=9.59, p<.01, $\eta_p^2=.002$	3.58(1.32)**	3.09(1.24)**	F(1,408)=7.429, p<.01, $\eta_p^2=.007$	F(1, 865)=15.866, p<.001, $\eta_p^2=.018$

Note. SDs are indicated in parentheses. *p<.05,**p<.01,***p<.001

V-4. Discussion

Study 2 provided evidence of the role of attentional resource consumption in the effects of combined vivid factors. Increasing attentional load lowered participants' capacity to process the stimuli information. When the resource requirements of the dynamic presentations overload consumers' resource limitation, they will have no capacity to process information interpretation. Thus, the influence of neither dynamic nor static information can persuade consumers effectively.

VI. Study 3- The combined effects of 2 vivid elements on consumer behavior-visual message

Not only verbal information we discussed above, visual elements such as pictures (McQuarrie & Mick, 2003) also convey meaning and influence consumers' information search processes, elaborative processing, and intentions (Wu, Wu, & Wang, 2021). Information is encoded as the modality which received the information. It makes verbal is encoded by its meaning while pictures are encoded by visual image (Wyer & Radvansky, 1999). There is a chance that the differential processing of visual vs. verbal brings the combined impacts of dynamic presentations and physical distance various. Study 3 examines this possibility.

VI-1. Hypothesis Development

Information is encoded as the modality which received the information. It makes verbal is encoded by its meaning while pictures are encoded by visual image (Wyer & Radvansky, 1999).

According to Dual Coding Theory (Paivio, 1991), information processing is conducted through verbal and imagine processing subsystems. These two subsystems are separated yet unconnected. A verbal processing subsystem is activated when consumers receive textual information from the external world. Consumers will generate images from the information in the comprehension process automatically which then helps them perform sequential information encoding. However, an image processing subsystem is activated when consumers receive visual information. Visual (pictures) information can be encoded as it is (Wyer & Shrum, 2015). Because of the conversion of the encoding process of text, it should request more effort for processing verbal information (Paivio & Begg, 1971; Pieters & Wedel, 2004). Therefore, the processing of pictures is easier than text information and it requests a less attentional resource (Winkielman & Cacioppo, 2001; Schwarz, 2004).

Thus, when it comes to proximal picture information, the dynamic picture may become noise of picture processing, however, the picture is encoded with its visual image. There is no need to generate an image from the picture like how we process verbal images. The extra attentional resource could support the processing of the

picture even it is moving. The ease of imagery forming results in more elaboration of the dynamic picture, and consumers' favorable evaluation of products implications.

On the other hand, as previously mentioned, when a picture is displayed far from consumers, consumers feel lots of perception load (Lavie & Tsal, 1994). Therefore, a moving picture though is vivid, the lack of available resources for processing makes consumers' evaluation of products implications negatively. Therefore,

H5a. Consumers will evaluate the implication of the product is *more likely* when they see a dynamic visual description of the product when *close to* it.

H5b. Consumers will evaluate the implication of the product is *less likely* when they see a dynamic visual description of the product when *far from* it.

The visual presentation may elicit the imagery of experiencing the product when purchasing a product (Roggeveen et al., 2015). When consumers see proximal visual information, appealing visual presentations such as dynamic presentations may deepen the favorable intention to purchase (Park, Lennon, & Stoel, 2005). Furthermore, the process of visual information request less attentional resources since it is processed and encoded by the image itself, thus, the volume of attentional resources is enough to process the perception and comprehension task of information. The elaboration of information makes the purchase intentions higher when consumers see a dynamic visual message rather than they see a static visual message.

On the other hand, when consumers see a dynamic picture which is displayed far from them, they could be attracted efficiently by the prominence of dynamism (Peter & Olsen, 2009). However, with the growth of perceptual load, consumers have to process all the stimuli in vision first. They also have to process both the perception of dynamic presentations and comprehension of information meaning activities (Lavie & Tsal, 1994). Thus, the competition of attentional resources will reduce the unfavorable intentions of purchasing. Therefore,

H6a. Consumers will show *higher purchase intention* of the product when they see a dynamic visual description of the product when *close to* it.

H6b. Consumers will show *lower purchase intention* of the product when they see a dynamic visual description of the product when *far from* it.

Sensory inputs directly affect consumers' mental imagery of the stimuli. For instance, high imagery visuals such as vividly presented information are effective in the generation of mental imagery in consumers' minds (Babin & Burns, 1997). When consumers see picture depictions, they will experience mental imagery through interaction with the product, and the visual depictions further influence consumers' intentions (Elder & Krishna, 2012). Therefore,

H7. Mental imagery mediates the combined effect of physical distance (proximity vs. distance) and presentation formats (dynamic vs. static) on consumers' intentions.

VI-2. Method

Participants and design. This experiment was carried out on the research website Yahoo! Japan Crowd Sourcing. Two hundred and fifty-two participants were recruited. The gender and age of participants were not controlled. In detail, seventy-nine (31%) of them are female, the average age is forty-nine. These participants were randomly assigned to cells of 2 (presentation formats: dynamic vs. static) × 2 (physical distance condition: proximity vs. distance) between-subjects design.

Table 9. Sample attributes of Study 3

Gender (n=252)	Male	173(69%)	Age (n=252)	~19	1(0.4%)
				20~29	13(5.16%)
				30~39	32(12.7%)
	Female	79(431%)		40~49	80(31.74%)
				50~59	86(34.13%)
				60~	40(15.87%)

Stimulus and procedure. This experiment was developed from the study of Jia et al., (2017) and Roggeveen et al. (2015) and employed a fictitious book café named

Reading Time. The reason is that café is a kind of service which widely used by consumers. It is close to our real experience and easy for participants to evaluate.

First, participants read a general instruction about this experiment. In order to prevent them from being aware that this is an experiment, the following scenario is designed. “This research is to examine the effects of advertisement. Collected data will be just used for static analysis and marketing research. Privacy information is protected; please feel free to answer the following questions. A new book café which named Reading Time will be opened in this area. Reading Time can provide a reading space in the café. This café would like to let their advertisements be presented in the front of station build. Please refer to the following café instruction and answer subsequent issues.”

Then, they saw a picture of a station building. We employed a station building because this experiment is directly carried out on the website Yahoo! Crowd Sourcing. Predictably participants’ age distribution and career are various. The station building is the place that every participant always passes away. Moreover, this experiment is illustrated as the examination of advertisements’ effect on consumer behavior toward a new book café that will release to the local market.

Measurements. The measurement of judgment intention of likelihood estimate was developed from the studies of Jia et al. (2017), which includes three questions of “How possible do you think that you could pass relax time in this book café? (1=very impossible, 7=very possible)”; “How probable do you think that you could pass relax time in this book café? (1=very improbable, 7=very probable)”; and “To what extent that you think it’s possible to pass relax time in this book café? (1=very inefficacious, 7=very efficacious)” ($\alpha=.898$).

A set of questions about purchase intention was developed from Spears and Singh (2004), which measured along a 7-point scale from 1 (not at all) to 7 (very much). For instance, it includes “How possible would you go to this book café when it opens?”; “To what extent that you would buy the jelly which described in the prior verbal message?”; and “If you want to find a place that can relax, would you go to this book café?” ($\alpha=.955$).

The measurement of mental imagery was developed from the studies of Jia et al. (2017). Three questions were measured along a 7-point scale from 1 (not at all) to 7 (very much), which include “How vividly could you imagine that you could pass

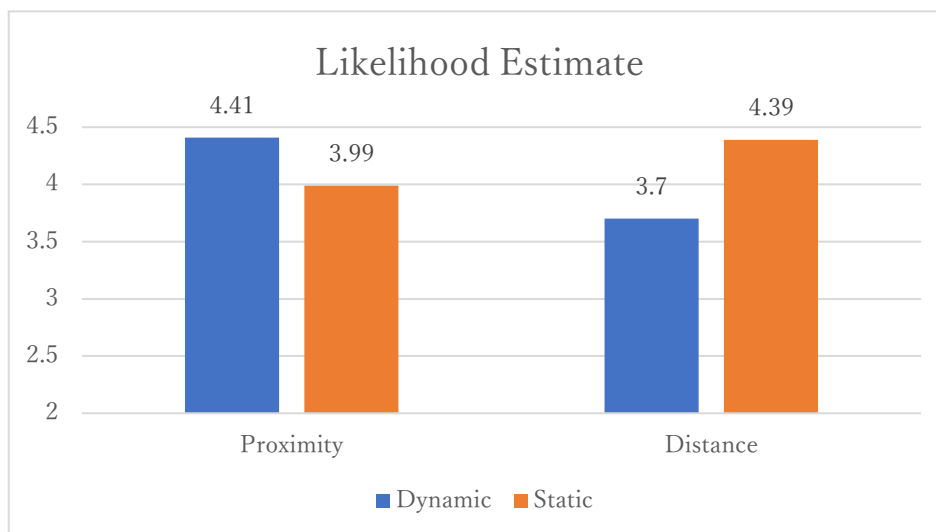
relax time in this book café?"; "How clearly could you imagine that you could pass relax time in this book café?" and "To what extent did the images that you could pass relax time in this book café?" ($\alpha=.916$).

VI-3. Results

Manipulation Checks. Participants reported a closer distance between the place where take the photo of the station building to the billboard on the wall of the building in the physical proximal condition ($M=3.67$, $SD=1.00$) than those who in the distant condition ($M=4.15$, $SD=1.15$; $F(1, 250)=12.324$, $p<.01$, $\eta_p^2=.047$). Thus, the manipulation of physical distance is successful.

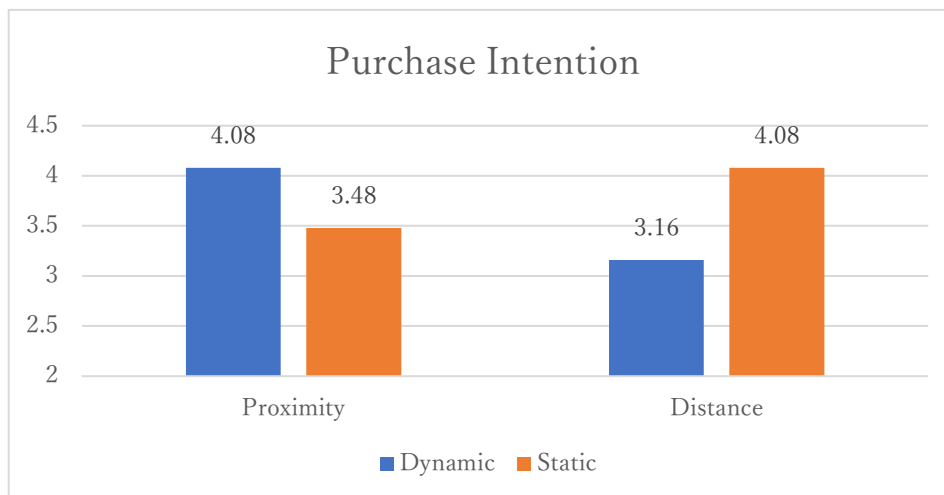
Likelihood Estimate. An analysis on judgment intention of likelihood estimate showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p>.820$). The interaction between presentation format and proximity condition was significant ($F(1, 248)=18.391$, $p<.001$, $\eta_p^2=.069$). As expected, in the physical proximal condition, participants reported a higher probability that Super Jelly will be valid to release fatigue and sleepy when they saw the static format ($M=3.99$, $SD=.93$) than when they saw the dynamic format ($M=4.41$, $SD=1.05$; $F(1,248)=10.111$, $p<.05$, $\eta_p^2=.021$). In the physical distant condition, the result was reversed ($M_{static}=4.39$, $SD_{static}=.94$; $M_{dynamic}=3.70$, $SD_{dynamic}=1.15$; $F(1,248)=14.262$, $p<.001$, $\eta_p^2=.054$). Thus, H5a and H5b were supported.

Figure 11. The result of likelihood estimate of Study 3



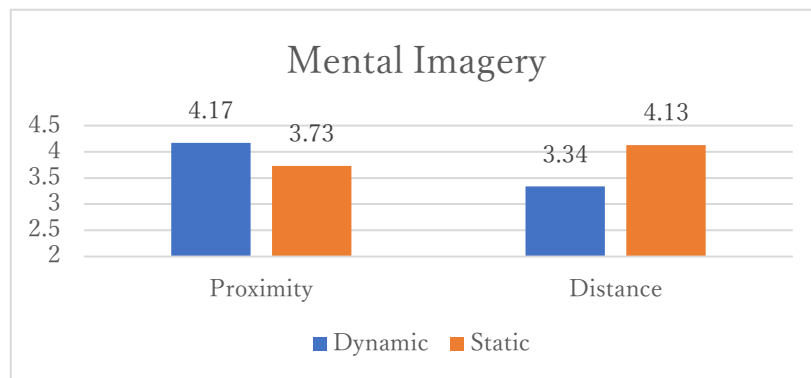
Purchase Intention. An analysis on participants' purchase intention showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p > .866$). The interaction between presentation format and proximity condition was significant ($F(1, 248) = 21.205, p < .001, \eta_p^2 = .079$). As expected, in the physical proximal condition, participants would buy the jelly more when they saw the static format ($M = 3.48, SD = 1.37$) than when they saw the dynamic format ($M = 4.08, SD = 1.25; F(1, 248) = 6.549, p < .05, \eta_p^2 = .026$). In the physical distant condition, the result was reversed ($M_{\text{static}} = 4.08, SD_{\text{static}} = 1.29; M_{\text{dynamic}} = 3.16, SD_{\text{dynamic}} = 1.34; F(1, 248) = 15.628, p < .001, \eta_p^2 = .059$). Therefore, H6a and H6b were supported.

Figure 12. The result of purchase intention of Study 3



Mental Imagery. An analysis on participants' mental imagery showed that neither the main effect of presentation format nor that of proximity condition was significant (all $p > .786$). The interaction between presentation format and proximity condition was significant ($F(1, 248) = 19.457, p < .001, \eta_p^2 = .073$). As expected, in the physical proximal condition, participants images of super jelly that formed from the message were more vivid when they saw the static format ($M = 3.73, SD = .97$) than when they saw the dynamic format ($M = 4.17, SD = 1.11; F(1, 248) = 5.081, p < .05, \eta_p^2 = .020$). Moreover, in the physical distant condition, the result was reversed ($M_{\text{static}} = 4.13, SD_{\text{static}} = 1.15; M_{\text{dynamic}} = 3.34, SD_{\text{dynamic}} = 1.20; F(1, 248) = 15.873, p < .001, \eta_p^2 = .060$).

Figure 13. The result of mental imagery of Study 3



Mediation analyses. We predicted that the interaction effect of physical distance and information presentation formats would lead to different level of mental imagery, which in turn would influence of the effects of information. A mediated moderation analysis (Hayes 2017; Model 8; Bootstrap 5000 resamples) indicated that the impact of physical distance \times presentation formats on participants' judgment intention of the product was mediated by the mental imagery they could form ($B=.80$, $SE=.03$; $95\%CI= .75$ to $.86$). Specifically, the indirect effect of mental imagery was significant both in the proximal condition ($B=-.67$, $SE=.17$; $95\%CI= -1.00$ to $-.34$) and in the distal condition ($B=.32$, $SE=.15$; $95\%CI=.03$ to $.64$).

Moreover, a mediated moderation analysis (Hayes, 2017; Model 8; Bootstrap 5000 resamples) indicated that the impact of physical distance \times presentation formats on participants' purchase intention of the product was mediated by the mental imagery they could form ($B=.75$, $SE=.06$; $95\%CI= .64$ to $.87$). Specifically, the indirect effect of mental imagery was significant both in the proximal condition ($B=-.63$, $SE=.16$; $95\%CI=-.95$ to $-.32$) and in the distal condition ($B=.30$, $SE=.14$; $95\%CI=.02$ to $.60$). Therefore, H7 was supported.

Fluency. Based on the provided information, participants' difficulty in evaluating the production was not significantly different in close and distant conditions ($M_{proximity}=3.81$ vs. $M_{distance}=3.47$, $p=.291$ respectively ns.; $F(1,248)=1.12$). Therefore, processing fluency did not influence the effect of physical proximity and presentation format on ones' judgment.

VI-4. Discussion

Study 3 discussed the combined effects of dynamic presentations and physical distance for a visual message. The results showed constant effects of dynamic presentations partially in the proximal condition. That is, a proximal dynamic visual message increases consumers' intentions toward products. However, few research considered the effect of dynamic visual information which is far from consumers. Study 3 demonstrated that, a distant dynamic visual message decreases consumers' intentions toward products.

VII. General Discussion

VII-1. Substantive findings

The purpose of this research is to examine when vivid information could exert stable impacts. We introduced a new boundary condition named physical distance. To the best of our knowledge, there is no prior research to explore vividness effects with the physical distance. The reason why we employ this factor is that the physical distance determines consumers' perceptual load of information processing. Vividly presented messages such as dynamic information are always used as a way to attract consumers' attention to process marketing communication messages. On one hand, vivid information is widely used since marketers believe that vivid messages could provoke consumers' favorable reactions toward the information (Mathews, 1994). However, on the other hand, the selective attention and comprehension of information deplete attentional resources (Peter & Olson, 2009). Attentional resources as a common resource, are allocated into all the stages of consumer information processing. The allocation of attentional resources relies on the level of perceptual load which is influenced by physical distance.

According to this research, we shed light on the influence of dynamic presentations in the various physical distance on consumers' judgment intentions, saying consumers' likelihood estimates of products implications which is as information description, as well as consumers' purchase intentions toward described products for both verbal information and visual information. Both dynamic presentation formats and the physical proximity could exert vividness effects by eliciting consumers' vivid mental imagery of products. Our intuition is telling us that when we combined these two vivid elements together, the persuasion of information would be double. However, based on the allocation of attentional resources that are relevant to perceptual load, the results of the present research indicated more nuanced hypotheses. We will discuss the results in detail below.

Across three studies, we get below main findings and Table 11 summarized the main findings of Study 1 and Study 3.

Table 11. Summary of Study 1 & Study 3

Distance	Presentation Formats(S1)	Likelihood Estimate, Purchase Intention	Distance	Presentation Formats(S3)	Likelihood Estimate, Purchase Intention
Physical proximal	Dynamic verbal information	Low	Physical proximal	Dynamic visual information	High
	Static verbal information	High		Static visual information	Low
Physical distance	Dynamic verbal information	High	Physical distance	Dynamic visual information	Low
	Static verbal information	Low		Static visual information	High

First, H1a, H1b, H2a, H2b, and H3 are supported (Study 1). That is, for verbal information, although both dynamic presentations and physical proximity could evoke consumers' vivid imagery of products, the impacts of dynamic proximal information on consumers' judgment intention and purchase intention are lower than static proximal information. On the contrary, in the physical distant condition, consumers' intentions are higher when they perceive a dynamic verbal message than a static one. The results demonstrated that when individuals perceive a vivid verbal message from visual, they would devote more attentional resources (Nisbett & Ross, 1980) to it and imagine the contents. The persuasiveness of the vivid material is influenced by the elaboration of the presented material (Kisielius & Sternthal, 1984). This elaboration depends on the number of cognitive resources that individuals devote to the composition (McGill & Anand, 1989). Moreover, a dynamic presentation format is attentional-getting media. In the condition that viewers are free attention, they may allocate more attention to suppress the distraction of vivid formats from the main stimuli/task of message contents processing when combining the two factors (Frey & Eagly, 1993). The insufficient attentional resources obstruct people's elaboration on message contents when they see a proximal dynamic (vs. static) format. However, when individuals are far from stimuli, their resource is seldom consumed by the irrelative context, such as dazzling presented ways of messages. Consumers could put their attention

resources into elaborating message contents so that the messages are more persuasive to them. Therefore, vividness effects play a role in consumers' judgments making.

Then, H4 is supported (Study 2). That is inducing attentional load makes the persuasiveness of the two combined vivid factors diminished. It advised that the consumption of attentional resources assured to influence the impact of the combination of presentation formats and physical distance. There is a general limitation of attentional resources (Moray, 1967), the consumption of resources invalidated the processing capacity of information. The consumption may hinder the process of information on several points of the information processing model. For example, although a dynamic message could attract consumers' attention, little capacity is spared to suppress the perception of moving elements when consumers encode the meaning of verbal information. Static information could not attract consumers' attention, so it should be more spared resources to process the information. However, in the processing of information, consumers need to classify the type of stimuli, whether the message is central or peripheral (Levie et al., 2004). It leads to the comprehension step, consumers may not understand the message fully. Either of the above may decrease consumers' interpretation of the information, further, lower their likelihood estimate or purchase intention.

Finally, H5a, H5b, H6a, H6b, and H7 are supported (Study 3). That is, consumers' intentions toward the product become higher when consumers see the dynamic presented pictures in physical proximity. On the contrary, when consumers see the presentation in a physically distant place, they will show higher intentions when seeing a static presentation rather than seeing a dynamic presentation. The processing systems of text and pictures are separated, as well as the processing flow of the two formats (Paivio, 1991; Wyer & Radvansky, 1999). The processing of verbal interpretation goes through perception, encoding as meaning, image generating, and comprehension. However, the processing of a picture could be encoded as itself, and there is no step of generating an image (Wyer & Shrum, 2015). Therefore, it requests less resource capacity for picture processing. In a physical proximity condition, although the perception of dynamic formats may distract the processing of information, the pictures are encoded as images directly. The vividness of these images generated from dynamic pictures could increase

consumers' intention than static ones. On the other hand, as previously mentioned, when a picture is displayed far from consumers, consumers feel lots of perception load (Lavie & Tsal, 1994). Therefore, a moving picture is vivid though, the available resource for processing is not enough.

VII-2 Theoretical Implication

VII-2-1. The contribution to the literature on vividness effects

Our results contribute to the literature on vividness effects. However, we provide a new perspective named attentional resources to explain the controversial results of vividness effects in prior research. We shed light on the “elusive” vividness effects from this perspective by examining the combination of physical distance (proximal vs. distal) and presentation formats (dynamic vs. static) with both verbal and visual information. As one reason for the vague influence of vividness, the confusion of the vividness concept is suggested. When it is the formats that are made vivid, the persuasiveness of the message itself may be obscured (Taylor & Thompson, 1982). The competition of attentional resources allocated to perceive the vivid formats influence the processing of information.

VII-2-2. A new perspective to explain paradoxical vividness effects-Attentional Resources

Second, the present study provided evidence of the positive influence of attentional load in the consumer behavior field. Increasing the consumption of attentional resources can limit individuals' capacity to process distraction factors such as vivid presentations, therefore, letting people focus on message elaboration (Rees et al., 1997).

The present research positions the attention/comprehension phase of the consumer information process model in the mass communication field, however, the results also shed light on the vivid communication messages on websites and mobile marketing. It seems that the physical distance is settled when consumers use their computers and mobile. However, we introduced physical distance as an indicator of perceptual load. Perceptual load refers to 1) the number of stimuli, 2) the amount of information required to process, and 3) the complexity of the physical

stimuli, particularly the distractor (peripheral) stimuli (Macdonald & Lavie 2011). Therefore, the perceptual load is determined by the stimuli which input into vision. The density of webpage or mobile pages also could increase the perceptual load of information processing and further influence consumers' intentions.

VII-2-3. Combined effects of more than one vivid factor

Third, in the marketing communication field, most previous works illustrated the vividness effects through only one vivid factor such as dynamic presentations (Roggeveen et al., 2015; Hong et al., 2004). There was little consideration of the effects of the combination of more than one vivid factor. Moreover, researchers always ignored the role of physical distance. As a tactic that could elicit vividness effects (Jia et al., 2017), the combined effects of such two factors are important. This study combined two vivid elements simultaneously. It is believed that when we compose messages' presentations with more than one vivid element, it may catch people's attention as expected. However, recipients might just put more attention into suppressing the distraction of the presentation formats rather than elaborating its contents.

VII-3 Practical Implication

Some practical implications can be advised here. Individuals always incidentally pass by various media such as digital billboards, POP advertising, etc. Marketers prefer to make their information prominent by employing various vivid information to get consumers' attention and persuade them to form a positive attitude toward their products.

However, an optimal presentation format (i.e., dynamic or static) for each media and information type (i.e., verbal or visual) is worth to be considered according to this study. For instance, the digital display is widely used in marketing communication such as advertising and other promotion. The communication message could be composed of text or picture with the format of dynamic or static. Considering the perceptual load of the exposure environments of the display places, it's better for marketers to select an optimal communication format.

Moreover, makers always would like to set a small size digital display on shelves at retail stores to present the product implication. Referring to that two rows of

shelves are always close to each other, static words may elicit consumers' more imagery of product implication than rolling words. For smartphone advertising, compared with a flash one, a still one may be a better choice to persuade consumers since we see screens closely. When it comes to cinemas and billboards, the contents shown by rolling words are prior to static ones.

On the other hand, depending on the amount of exposure to persuasive appeals, consumers' agreement with the message was different (Cacioppo & Petty, 1979). A large amount of information exposure will deplete consumers' attentional capacity to process peripheral distractions. Therefore, if marketers would like to employ animated formats in the proximal displays such as the displays on the pillars of subway stations, it is considered that spilled information may lower consumers' capacity of processing of two combined vivid factors. Therefore, it's better to choose visual messages than verbal ones on this occasion.

VII-4. Limitation and Future Research

The present research implies the combination of presentation forms and physical distance to examine the vividness effects. However, there are still some issues that should be demonstrated in the future.

VII-4-1. Vividness effects in multisensory marketing

First, there are some considerable research chances in vividness effects in multisensory marketing.

Visual is the most popular modality when companies communicate with consumers. Since vividness is considered to be a dominant factor of mental images (Burns et al., 1993; Ellen & Bone, 1991), the effects of visual information on consumer behaviors are often discussed when considering the vividness effect in advertising research and consumer behavior research fields. For example, researchers examined the persuasiveness of vivid information with vivid pictorial images (Peter and Olson, 2009), animation (Toet et al., 2019), videos (Roggeveen et al., 2015), 3-dimension (van Kerrebroeck et al., 2017), 360-degree rotatable image (Kim et al., 2020), and recently visual argument (van Kerrebroeck et al., 2017).

However, Andrade et al. (2014) claimed that although visual imagery was discussed most, other modalities also may evoke mental imagery. The processing of mental imagery is related to the idea, emotion, and the specific representation of memory through olfactory, gustation, visual, haptic, and auditory (MacInnis & Price, 1987). Other modalities besides vision could elicit mental imagery too.

In recent years, multisensory marketing gets attention in both managerial and academic research. In bricks and mortar, it is possible to create an environment that elicits abundant images from five senses. Moreover, with the development of technology, it is possible to engage more senses in the web environment (Petit, Velasco, & Spence, 2019). For example, it is possible to stimulate visual by using 3D, VR technology (Choi & Taylor, 2014; van Kerrebroeck et al., 2017); to stimulate haptic sensory by using the vibrate function of touchscreen devices such as tablets and smartphones (Wang et al., 2020); to stimulate auditory with auditory equipment such as earphones and headphones (Petit et al., 2019), and even to stimulate olfactory by using smell input equipment such as MetaCookie+ (Narumi et al., 2011).

All of the above sensory-stimulating methods make it possible for consumers to generate mental imagery besides vision. Therefore, in future research, it is necessary to investigate the vividness effects formed by the utilization of the multisensory modality in both offline and online marketing.

Moreover, it's important to clarify consumers' complex cognitive process of multisensory stimuli.

VII-4-2. The delayed judgments that influenced by the combined vivid elements

Second, there should be some research chance to discuss the impacts of a combination of physical distance and presentation formats on consumers' delayed judgments.

Participants reported their immediate mental images and judgments upon seeing the stimuli materials in the present research. However, vividness effects are not always significantly influence individuals in the real-time evaluation and delayed evaluation. For example, Jonathan and Melvin (1986) provided the evidence that vividness effects affect individuals both in immediate and delay judgments while

Reyes et al. (1980) only find the significant results of vividness effects in delayed but not in immediate judgments. In real experience, it is normal for consumers to form judgments or intentions of a persuasive message days later after they see it. It is necessary to test and verify the impacts of the combination of physical distance and presentation formats on consumers' delayed judgments.

VII-4-3. The role of attentional resource in combined effects of dynamic presentations and physical distance of visual information

Finally, the present research clarified the influence of attentional resources on the combined effects of two vivid factors in the verbal information condition. However, there is also a chance that two vivid factors are employed for visual information, or the combination of verbal-visual information. It's worthy to make clear of such influences of two vivid factors in the visual information or verbal-visual information condition.

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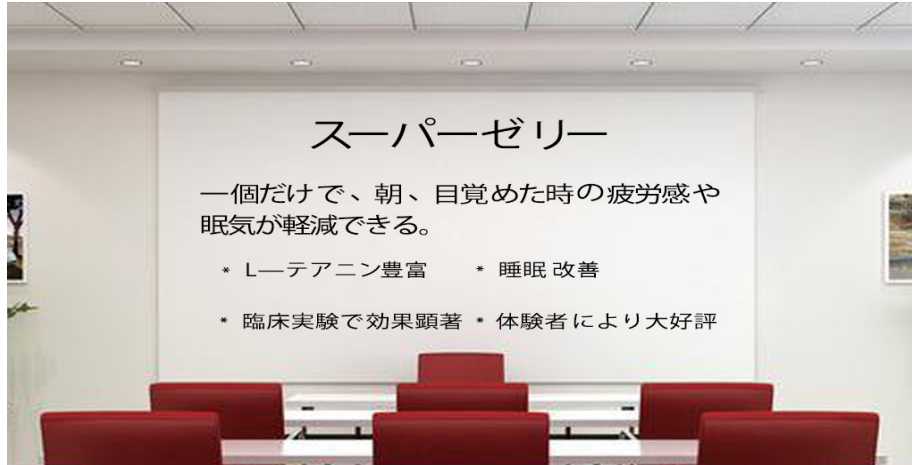
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Appendix: Experimental Conditions

Study 1 Main Study & Study 2

- Proximity x Static



- Proximity x Dynamic

The distance condition is the same as above. That is, the photo is taken from the third row of the conference room. However, characters in the message are displayed one by one.

- Distance x Static



- Distance x Dynamic

The distance condition is the same as above. That is, the photo is taken from the fifth row of the conference room. However, characters in the message are displayed one by one.

Study 1 Supplementary Study

▪ Proximity x Static



▪ Proximity x Dynamic

The distance condition is the same as above. That is, the photo is taken from the third row of the conference room. However, characters in the message are displayed one by one.

▪ Distance x Static



▪ Distance x Dynamic

The distance condition is the same as above. That is, the photo is taken from the fifth row of the conference room. However, characters in the message are displayed one by one.

Study 3

- Proximity x Static



- Proximity x Dynamic

The distance condition is the same as above. However, total three photos of the book café are displayed one by one.

- Distance x Static



- Distance x Dynamic

The distance condition is the same as above. However, total three photos of the book café are displayed one by one.