

## **The influence of different virtual product experience types on advertising effect: Imagery instructions and imagery-processing model as moderators**

**不同虛擬產品經驗類型對廣告效果之影響—以想像指示與心像處理模式為干擾變數**

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**Abstract:** With the proliferation of virtual product experience (VPE) applications on social network sites, investigations into the effects of VPE on consumer responses are becoming more important. The purpose of this research is therefore to expand the findings of previous studies by comparing the advertisement effects from mere virtual presence with product experience (MVPE) with those from social virtual product experience (SVPE). We employ two moderators (imagery instructions and imagery-processing models) to analyze various VPE types and advertisement effects and design a factorial online experimental design to validate the research model and hypotheses. Of the 504 total participants recruited for this experiment, study 1 first examines a sample of 310 participants to compare different VPE types on Facebook, while study 2 looks at a sample of 194 participants by assessing Facebook and Pinterest social media platforms. This study finds that different imagery instruction and imagery-processing models' moderators help determine the

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influences that different combinations of VPE types and social media platforms have on advertisement effects. Therefore, businesses can target to improve their community management by periodically posting advertisements on social media platforms using multimedia or text that trigger mental imagery.

**Keywords:** Mere virtual presence with product experience, social virtual product experience, mental imagery, advertising effect.

**摘要：**隨著社群網站上虛擬產品經驗(Virtual Product Experience, VPE)應用的成長，調查虛擬產品經驗對消費者的反應愈來愈顯得重要。本研究目的是透過比較單純虛擬在場產品經驗(Mere Virtual Presence with Product Experience, MVPE)與社交虛擬產品經驗(Social Virtual Product Experience, SVPE)對廣告效果的影響來擴展先前研究的結果，並以採用想像指示與心像處理模式為干擾變數，評估對各種虛擬產品體驗類型(MVPE、SVPE)及不同社群媒體平台(Facebook、Pinterest)的廣告效果。本研究實驗設計總共招募 504 名參與者，其中研究 1 有 310 名參與者，比較 Facebook 上的不同 VPE 類型對廣告效果的影響；而研究 2 有 194 名參與者，評估 Facebook 與 Pinterest 社交媒體平台的差異對廣告效果的影響。研究結果顯示，不同的想像指示與心像處理模式的干擾效果有助於確定 VPE 類型和社交媒體平台的不同組合對廣告效果的影響。因此，企業可以定期在社群媒體平台上運用多媒體或圖文內容發布廣告觸發消費者心像來增進社群管理。

**關鍵詞：**單純虛擬在場產品經驗、社交虛擬產品經驗、心像、廣告效果

## 1. Introduction

Interpersonal relationships among social network members form the foundation of social network development. Social network sites (SNSs) are virtual communities where users share their life experiences, post pictures and videos, and interact with others, even with people they do not know (Simon *et al.*, 2015). Many enterprises have changed their marketing strategies and marketers via virtual social networks in order to better engage and collaborate

with consumers (Braasch *et al.*, 2019;Pham *et al.*, 2019). Indeed, Facebook has now become an integral part of the lives of many people, influencing their engagement in life interactions, commerce, culture, and politics. There are approximately 55 million status updates made and 350 million photos uploaded on Facebook every day (Facebook, 2018). This platform provides a “friend-vertising” function that allows users to share their favorite brand information with others, that offering a strong advantage for using Facebook as a marketing tool (Maurer and Wiegmann, 2011). The recent growth of image-sharing SNSs, such as Pinterest and Instagram, has attracted attention from researchers and practitioners, as Duggan (2015) reported that 31% of online adults use Pinterest and 28% use Instagram. Social media allow enterprises to promote their brand marketing, and any connection with consumers on networks present positive effects on brand assessment and purchase intention. Hence, an increasing number of enterprises have gradually established online social networks for their brands on different social media platforms, with the target of influencing consumers through virtual social networks (Chung *et al.*, 2015).

Previous studies have shown that consumer online shopping experiences influence how they perceive and assess future purchasing situations (Gefen and Straub, 2004; Keng *et al.* 2014; Keng *et al.* 2015; Keng *et al.* 2018). Although the relationships among virtual experience, purchasing situations, and consumer behavior are clear, the role of the social effect in the consumption environment during interactions is seldom studied. Naylor *et al.* (2012) found that supporters of other brands merely share their brand experience in a passive manner and present it in online brand networks in the form of mere virtual presence (MVP). This could have a positive effect on the brand evaluation and purchase tendency of the target subjects. Interpersonal relationships among network members also influence purchase decisions (Cha, 2009; Zhou, 2011), as even online shopping is not merely a behavior of purchasing products, but also an interpersonal interaction during the process (Keng *et al.*, 2011). Interpersonal interaction influences a person’s feelings about a product (Barlow *et al.*, 2004;Floyd and Wooldridge, 1999). Belk (2010) proposed the concept of the social virtual

product experience (SVPE), probed into interpersonal interactions, and summarized three motivations for interpersonal interactions in society - sharing, gift-giving, and exchange - that can be used to classify sharing and interaction.

The emergence of Instagram and Pinterest in recent years has actuated a trend of image-based social sharing as well as increased attention on the concept of visual marketing (Chen and Wang, 2019; Kim *et al.*, 2017). Past studies have investigated the effects of mental imagery on consumers' responses and advertising effect (Chou and Deng, 2010; Escalas and Luce, 2003; Escalas and Luce, 2004; Zhao *et al.*, 2009) and have compared mental imagery with more perspective presentation modes (Bone and Ellen, 1992; Jiang *et al.*, 2014; MacInnis and Price, 1987; Orús *et al.*, 2016; Soliman *et al.*, 2017, Saine *et al.*, 2018). For example, pictures and videos evoke a viewer's self-imagery, and such self-imagery can uniquely affect subsequent responses (Jiang *et al.*, 2014). Therefore, an in-depth investigation into information processing in visual-focussed social media is warranted, prompting our study to look into the moderating effects of imagery instructions and imagery-processing models.

This study aims to propose and validate the influences of different virtual product experiences (MVPE and SVPE) on advertisement effects. Enhancing imagery instructions and imagery-processing models can help moderate the relationship between different combinations of VPE types and advertisement effects. Thus, our research questions are as follows.

RQ1. How do the moderating variables of imagery instructions and imagery-processing models influence a customer's brand attitudes and purchase intention in the proposed VPE types?

RQ2. How do different social media platforms (Facebook and Pinterest) influence advertisement effects in the VPE types?

To answer these research questions, we conduct two experimental studies. Study 1 focuses on the differences in effects on advertising between MVPE and SVPE under different combinations of instructions, in order to visualize the imagery processing models in Facebook. Facebook is a social website that concentrates on consumers, and information is mainly shared in the form of

pictures and texts. By contrast, Pinterest is a sharing-oriented social website that focuses on topics, and the members attract others by sharing pictures. Thus, Study 2 evaluates the effects of the differences between Facebook and Pinterest on advertising with different combinations of instructions to picture the imagery processing models.

## **2. Literature review**

### **2.1 Virtual product experience**

Consumer attitude is derived from experience, and all experiences originate in the interactions between individuals and targets or environments. A virtual product experience (VPE) creates a sense of telepresence, meaning consumers can have virtual experiences by experiencing a three-dimensional (3D) environment on a computer. Virtual experience is a mental and emotional response generated through interactions. It enables consumers to undergo a presence-like shopping environment on the Internet and enhances their experience and feeling about shopping. In comparison with the indirect product experience of traditional advertising, VPE has a wide array of applications (Li *et al.*, 2001).

VPE refers to consumers' feelings on the Internet as well as their experiences of interacting with products through electronic media. VPE refers to consumers' feelings on the Internet as well as their experiences of interacting with products through electronic media. VPE can effectively enhance consumers' feeling about products, enabling them to evaluate products from diverse perspectives, in order to create effects that are equal to a direct experience (Dahan and Srinivasan, 2000; Klein, 1998). Therefore, websites equipped with VPE can strengthen consumers' learning ability, thus influencing brand attitude towards products.

Enterprises can influence consumers' selection and purchase of products through websites by adopting 3D visualization technologies that improve the virtual product experience. Moreover, they can enhance advertising persuasion

and purchase intention (Daugherty *et al.*, 2008). Keng *et al.* (2011) suggested that different virtual product experiences generate various senses of virtual networks during highly virtual interactions. If online brand networks only provide simple information about products, but do not share the experiences of other factors, then consumers will have a weak sense of brand network. If the provided information includes relevant experiences about products, then there will be a strong sense of virtual network, even if consumers cannot see or touch the products.

In this study consumers' virtual product experience means that they become acquainted with products through a computer interface that influences the relationship between consumers and brands. VPE can be divided into mechanical and interpersonal virtual product experiences (Hoffman and Novak, 1996). Keng and Ting (2009) presented empirical results showing that interpersonal interaction enhances browsers, aesthetic experiences, as well as playfulness. According to Keng *et al.* (2011), with the degree of interaction and intimacy as the standard, interpersonal virtual experiences are classified, whereby higher degrees of interaction and intimacy form social interpersonal experiences. On social websites, common virtual product experiences include mere virtual presence with product experience (MVPE) and social virtual product experience (SVPE). In both cases, consumers become acquainted with products through interpersonal interactions on a computer. During the process of exchanging ideas and establishing a bilateral relationship, the virtual product experience will influence the relationship between consumers and brands forms.

Mere Virtual Presence with Product Experience (MVPE). Zajonc (1965) proposed the mere presence theory, suggests that social facilitation is created by the mere presence of others. Argo *et al.* (2005) suggested that in a consumption environment, the social effects occur regardless of the presence of interaction. Naylor *et al.* (2012) defined mere virtual presence as a phenomenon that members on the same virtual social platform have little interaction. In a virtual environment, brand fan pages may generate significant advertisement effects to its viewers even when no interactive behaviors among followers are disclosed on

the fan page or when followers are unassociated and only have a mere presence on the fan page. For instance, improve the brand evaluation (Naylor *et al.*, 2012); enhances consumers' trust (Gefen and Straub, 2004); and positive impact brand attitudes and purchase intentions (Keng *et al.*, 2018; Schaefer *et al.*, 2015).

Due to Internet is characterized by immediacy, interaction, anonymity, and telepresence, so that Internet has gradually replaced face-to-face interpersonal communication. Telepresence is the perception of the atmosphere of mere virtual presence even when the individual is not present. This study attempts to extend the findings of Naylor *et al.* (2012) and establish mere virtual presence with products (MVPE), based on the interpersonal social effect environment and the virtual product experience theoretically. MVPE is therefore defined as an experience, on the basis of social contact and social effects, in which the consumers receive the product or brand information from others even when they do not have public interaction or interpersonal connection, and become familiar with the products (Keng *et al.*, 2018).

Social Virtual Product Experience (SVPE). Social networking sites can be defined as a community system comprising various members and communication channels. Such sites constantly create interpersonal interactions between influencers and followers, affecting others to engage in consumption behavior (Tse and Chan, 2004). Contemporary social network websites, including Facebook, Pinterest and Instagram, have collected online social network concepts, and consumers can evaluate various brands through such social network websites. At the same time, enterprises can establish exclusive fan websites for their brands and have direct interaction with consumers on such social websites. Social virtual product experience is consumers intentionally or unintentionally discuss certain products and then develop a new kind of virtual product experience (Keng *et al.* 2018). Keng and Ting (2009) offered empirical results noting that interpersonal interaction enhances browsers, aesthetic experiences, as well as playfulness. According to Keng *et al.* (2011), with the degree of interaction and intimacy as the standard, interpersonal virtual experiences are classified, whereby higher degrees of interaction and intimacy

will form social interpersonal experiences.

By reviewing many scholars' theories related to human interaction behavior, Belk (2010) discussed the interaction relationship between persons and clearly included 3 kinds of classification elements regarding human social experiences: sharing, gift-giving, and exchange experience. Sharing experience refers to the actions and processes of distributing personal objects or information to others. Gift-giving experience involves gifting to show gratitude for others' politeness or respect, meaning a process whereby social relationships are established due to the obligatory function of giving and receiving a gift. Exchange experience refers to the reproduction of ownership over objects.

In this study, SVPE refers to consumers' product experience, as generated on social shopping websites, and is exactly the main variable of measuring consumer behaviors of social shopping. Gift-giving SVPE (C2C) is defined as the active sharing of information about commodities among consumers. Similar to sharing among friends, it emphasizes a social and mutually beneficial relationship with network members. One example is sharing videos through YouTube or sharing shopping experiences on Facebook. Exchange-SVPE (B2C) means that enterprises show clear and substantial behavioral features of exchange with the members of brand communities. For instance, Starbucks fans reposting discount posts can obtain a buy-one-get-one-free deal. Agoda.com members write reviews and share things to get discount codes. This is a B2C interaction model between enterprises and users.

## **2.2 Imagery instructions**

Mental imagery is defined as an information processing method to visualize concepts or ideas (Lutz and Lutz, 1977). In terms of information processing, mental imagery is established on theory and experience. For example, Mill and Stoica (2004) showed that mental imagery triggered by images in tourism advertising is the primary driver of behavioral intention. Jonas *et al.* (2019) found in online retail frontlines that mental imagery generation through augmented reality (AR) improves positive WOM and facilitates choice of high



value products. Therefore, using a picture to describe the experience of consumption is like helping consumers predict actual consumption.

MacInnis and Price (1987) believed that the content of visualization is an important factor and included self-image and other-image. Self-image means that a person imagines that he/she is using a product, while other-image indicates that a person imagines that others are using a product. Most research on consumer behavior has explored imagery instructions by manipulating who is in the imagined consumption simulation; i.e., themselves imagined or another consumer (Dahl and Hoeffler, 2004; Zhao *et al.*, 2011). For example, Jiang *et al.* (2014) instructed respondents to imagine themselves in a hypothetical scenario and then had them evaluate different versions of print ads. The experiment divided the respondents into self-imagery and general image groups and divided the imagery processing model into story construction and information collection. The results showed that this group has the best advertising effects, which is consistent with previous studies on imagery type, visual viewpoint, and imagery processing model. Soliman *et al.* (2017) examined whether the imagery perspectives (first-person or third-person) adopted affect consumer purchase motivation, and whether this effect depends on the extent to which the imagined purchase is connected to identity. Saine *et al.* (2018) investigated how imagery perspectives (actor vs. observer) can influence consumers' decisions to stay or switch.

According to previous studies, descriptions with pictures enable consumers to have an influence on advertising effect. This study extends the research result of Jiang *et al.* (2014), who proposed taking the self-image and other-image in the picture instruction as the interference factors. We then explore the effects of imagery type on advertising effects for consumers in different virtual product experiences.

### **2.3 Imagery processing models**

The imagery processing model is a method for consumers to deal with advertising information. MacInnis and Price (1987) defined the imagery

processing model as a process of visualizing inner images in operational memory and expressing the visual information. Thompson and Hamilton (2006) divided the processing model into a non-linguistic imagery processing model and a linguistic model according to the dual process theory. Compared with text, imagery coding is more suitable for pictures. Moreover, pictures have a greater number of memory codes that can be taken as a method of multiple extraction. Thus, this dual process has effects that are superior to pictures, which implies that a picture is more memorable than text.

Regarding the research on advertising marketing, some scholars have discussed the interactive application of imagery processing models and advertising strategies (Lutz and Lutz, 1977; Lutz and Lutz, 1978). Studies on consumer behavior have demonstrated that imagery processing models do have direct effect on the purchase intention of consumers (Bone and Ellen, 1992; MacInnis and Price, 1987; MacInnis and Price, 1990). Shiv and Huber (2000) believed that imagery processing models enable consumers to imagine the use of products and thus the results of consumption. Thompson and Hamilton (2006) explored consumer reaction to advertising and information processing and found that if consumers adopt the analytic processing model, then comparative advertising would trigger a stronger response; however, if consumers employed imagery processing models, then non-comparative advertising would trigger a stronger consumer response. Hence, the results showed that the fit between advertising forms and consumers' information processing models could have offer positive comments on advertising, brand evaluation, and purchase intention.

Escalas and Luce (2003) argued that imagery is similar to psychological simulation that exists in the form of a story (Fiske, 1993; Polkinghorne, 1991), including forming perceived expression and imaging an event or a string of events. Consumer experience influences the emotional reactions of consumers, and imagination is similar to psychological simulation and imagery (Escalas and Luce, 2004). The difference in the imagery processing objective influences the images in the mind of consumers. If consumers want to seek information, then

they may imagine from different perspectives. On the other hand, if they imagine the complete experience of using a product, then they would try to combine different images to form a complete narrative picture (Aval et al., 2007; Zhao et al., 2009).

Jiang et al. (2014) divided imagery processing models into (1) information collection: consumers collect as much information as possible about products, and the imagery in the mind of consumers is separated into pictures; and (2) story construction: consumers use collected information to form a story, or they combine separated pictures to form a complete story. If people want to construct stories about their consumer experience, then they usually imagine themselves in different consumption scenes and temporarily integrate them through themed narrative pictures. However, if they aim to collect information, then they would also try to incorporate themselves into images with different appearances. Nevertheless, these imaginations do not need to be combined into narrative pictures.

According to previous studies, adopting imagery processing models in advertising can help consumers quickly establish production perception, which will stimulate their purchase intention. This study takes the information collection and story construction of imagery processing models by Jiang et al. (2014) as the interference factors to determine the imagery type adopted for advertising according to different virtual product experiences, in order to enhance advertising effects.

## **2.4 Advertising effect**

This study divides the indices for measuring the advertising effect into two groups of emotion and behavior. Regarding the emotion group, brand attitude is taken as the measurement index, while purchase intention is the measurement index for the behavior group.

Innovative technologies in online stores are able to engender compelling virtual product experiences. Studies have shown that virtual product experiences have a direct positive effect on consumer attitude to the product and purchase

intentions (Algharaba, 2014; Gabisch and Gwebu, 2011; Li and Meshkova, 2013; Liao *et al.*, 2016). Overmars and Poels (2015) found that mental image processing and consumers' perception of experience value are environments for establishing VPE and can influence re-patronage intentions. Therefore, this study defines brand attitude as consumers' preference for brands or products after they watch the advertising of brand networks. Purchase intention is defined by consumers' intention of purchasing products after they watch the advertising of brand networks.

### **3. Hypotheses**

#### **3.1 Study 1: The different VPE types to influence advertisement effects**

Study 1 incorporates different imagery-processing models and imagery instructions to determine the correlations among MVPE, Giving-SVPE, Exchange-SVPE, and advertisement effects.

Imagery-processing models based on story-building require intensive information processing to collate the information from images into a story. In these models, the fluency of processing information rises with the increasing similarity and simplicity of the information received. Jiang *et al.* (2014) applied the same information volume to different combinations of self-imagery/general-imagery and story-building/data collection. The results showed that, in regard to the differences between the imagery outcomes induced through various information similarity levels and mental imagery-processing targets, these differences are more evident in self-imagery than in general-imagery. This is attributable to how self-imagery can better reflect self-related profile information; hence, self-imagery can enhance consumer preferences toward a product more so than other-imagery can (Chen *et al.*, 2019; Hung and Wyer, 2011; Jiang *et al.*, 2014). The effectiveness of mental imagery is examined in terms of the advertisement effect. Most evidence exists presenting that mental imagery elicited from visuals influences consumers' favorable responses, such as enhancing cognitive evaluations, positive product preferences,

and emotion (Herd and Mehta, 2019; Maier and Dost, 2018; Yoo and Kim, 2014). On an e-commerce setting, Lee and Shin (2020) offered empirical results whereby mental imagery evoked via online product presentations increases consumers' positive product attitudes.

When building a story is the goal of an imagery process, or when people self-assimilate in an imagery scenario to build a story, information heterogeneity reduces the imagery effect. Therefore, consumers generate favorable images in situations with few information sources and low information complexity. These images positively influence advertisement effects. The knowledge that an individual has concerning the target of imagery facilitates his or her imagery process, in which self-imagery is more attainable than other-imagery (Hung and Wyer, 2011; Jiang *et al.*, 2014).

When data collection is the goal of an imagery process, consumers will engage in a low information-processing process, because the collation of images is unnecessary, meaning consumers are not affected by information complexity (Novemsky *et al.*, 2007; Schwarz, 2004). Compared to other-imagery, self-imagery is more effective in depicting self-relevant profile information and thus is more likely to enhance consumer preferences toward a product. Multiple information sources enable consumers to conduct self-assimilation and generate various related mental images. Therefore, self-assimilation enhances the effect of imagination. We thus develop the following hypotheses.

*Hypothesis 1:* When consumers engage in self-imagery, the imagery-processing models to MVPE, Giving-SVPE, and Exchange-SVPE produce different advertisement effects.

*Hypothesis 1a:* When consumers engage in self-imagery to build a story, browsing MVPE websites has the highest advertisement effect compared to Giving-SVPE and Exchange-SVPE.

*Hypothesis 1b:* When consumers engage in self-imagery to collect data, browsing Exchange-SVPE websites has the highest advertisement effect compared to MVPE and Giving-SVPE.

Other-imagery refers to the process of imagining how others use a product. Consumers are more likely to engage in other-imagery when an increased amount of information of others is received. According to H1a, low information complexity contributes to increased information processing fluency when story building is the goal of an imagery process (Jiang *et al.*, 2014; Novemsky *et al.*, 2007; Schwarz, 2004). Thus, low information complexity is preferred when imagining a scenario. Consumers are also more likely to engage in other-imagery when an increased amount of information of others is received. Therefore, the effect of other-imagery directly correlates with the number of information sources.

When data collection is the goal of an imagery process, the imagination is less influenced by information complexity. Furthermore, consumers are more likely to engage in other-imagery when an increased amount of information of others is incorporated. The following hypotheses are now presented.

*Hypothesis 2:* When consumers engage in other-imagery, the imagery-processing models to MVPE, Giving-SVPE, and Exchange-SVPE produce different advertisement effects.

*Hypothesis 2a:* When consumers engage in other-imagery to build a story, browsing Giving-SVPE websites has the highest advertisement effect compared to MVPE and Exchange-SVPE.

*Hypothesis 2b:* When consumers engage in other-imagery to collect data, browsing Exchange-SVPE websites has the highest advertisement effect compared to MVPE and Giving-SVPE.

On the basis of H1 and H2, imagery instructions (self-imagery, other-imagery) and imagery-processing models (story building, data collection) interfere with the correlation of virtual communities (MVPE, Giving-SVPE, Exchange-SVPE) with brand attitude and purchase intention. This prompts us to offer then next hypothesis.

*Hypothesis 3:* Imagery instructions and imagery-processing models

interfere with the correlation between online virtual product experience and advertisement effects.

### **3.2 Study 2: The different social media platforms to influence advertisement effects**

Study 2 selects Facebook and Pinterest as the test social media platforms. Our study, which aims to reinforce research implications regarding the effects of MVPE on social networking sites, takes MVPE as the VPE type to investigate whether imagery-processing models and imagery instructions influence consumers' brand attitude and purchase intentions on social media platforms.

Similar images and text information are posted on Facebook and Pinterest to facilitate an unbiased standard for the participants to compare the imagery results. In the context of image-focused social media, imagery processing reflects the accessibility of consumption imagery relevant to pictures posted on social platforms and captures the experienced feelings (Herrmann *et al.*, 2013). This present study hypothesizes that the manner in which information is displayed, such as the hybrid text-image approach adopted by Facebook or the image-based approach by Pinterest, causes consumers to generate different mental images, consequently influencing the advertisement effects. Huang *et al.* (2018) investigated how imagery processing on Instagram predicts consumers mentally processing messages, in which the messages working as narratives (stories) in turn become immersed in those narratives via SNSs, which can deliver a story. Thus, this helps consumers construct narratives, while positively influencing brand SNS attitudes and visit intentions. Huang and Ha (2020) offered results that supported the pivotal role of mental imagery when consumers process visual messages in the context of a retail brand's Instagram.

When building a story is the goal of an imagery process, the experience that an individual has concerning the imagery target positively facilitates his/her self-imagery process (Hung and Wyer, 2011; Jiang *et al.*, 2014). An increased amount of similar information facilitates consumers' ability to generate and combine additional images (Radvansky and Zacks, 1991; Radvansky *et al.*, 1997;

Wyer *et al.*, 2002). Compared to the image-based approach of Pinterest, the hybrid text-image information display approach of Facebook is more informative, thereby enhancing consumers' self-imagery content and positively influencing the advertisement effect.

When data collection is the goal of an imagery process, compiling images into a story is unnecessary, and imagery is presented as scattered mental images. Pinterest can simultaneously display the images of various products, and therefore its platform is ideal for data collection. When self-imagery is added to the process of story building, self-assimilation enables additional personal experiences and responses. In addition, the high volume of similar information facilitates generating self-relevant imagination content, which positively influences advertisement effects. We thus arrive at the next hypotheses.

*Hypothesis 4:* When consumers engage in self-imagery, the imagery-processing models to MVPE-FB and MVPE-Pinterest produce different advertisement effects.

*Hypothesis 4a:* When consumers engage in self-imagery to build a story, browsing websites with MVPE-FB has the highest advertisement effect compared to MVPE-Pinterest.

*Hypothesis 4b:* When consumers engage in self-imagery to collect data, browsing websites with MVPE-Pinterest has the highest advertisement effect compared to MVPE-FB.

When building a story is the goal of an imagery process, according to H1a, the level of information similarity influences the formation of mental images during story fabrication. An increased amount of information facilitates consumers' generation and combination of additional images in their fabricated stories (Radvansky and Zacks, 1991; Radvansky *et al.*, 1997; Wyer *et al.*, 2002). During other-imagery, consumers are not required to include personal experiences, and the absence of such experiences reduces the vividness and realism of the mental imagery (Jiang *et al.*, 2014), meaning the ambiguity of the imagery effects renders them difficult to distinguish.

When data collection is the goal of an imagery process, combining images



into a story is unnecessary, and consumers only need to create scattered mental images. When other-imagery is considered, the results of previous research cases show that Facebook enables stronger user–user connections (Heidi, 2012). The information display approach adopted by Facebook generates more favorable other-presence effect than that of Pinterest. Therefore, our study infers that Facebook positively influences the other-imagery effect of consumers, leading to the next group of hypotheses.

**Hypothesis 5:** When consumers engage in other-imagery, the imagery-processing models to MVPE-FB and MVPE-Pinterest produce different advertisement effects.

*Hypothesis 5a:* When consumers engage in other-imagery to build a story, browsing MVPE-FB and MVPE-Pinterest results in similar advertisement effects.

*Hypothesis 5b:* When consumers engage in other-imagery to collect data, browsing websites with MVPE-FB has the highest advertisement effect compared to MVPE-Pinterest.

On the basis of H4 and H5, imagery constructions (self-imagery, other-imagery) and imagery-processing models (story building, data collection) could interfere with the correlation between virtual communities (MVPE-FB/MVPE-Pinterest) and advertisement effects. This brings us to the next hypothesis.

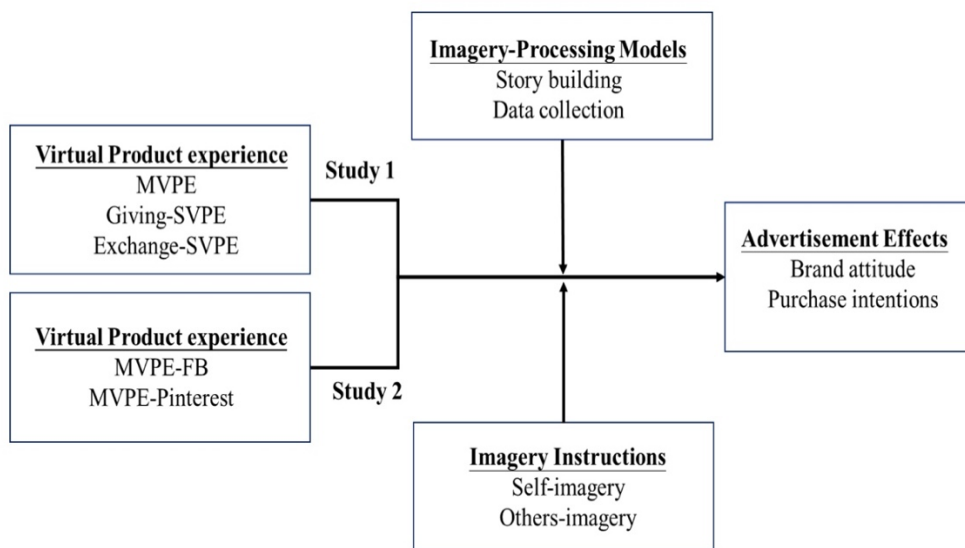
**Hypothesis 6:** Imagery constructions and imagery-processing models interfere with the correlation between virtual product experience and advertisement effects.

Figure 1 presents the resulting research model.

## 4. Methodology

### 4.1 Research design

This study employs a factorial online experimental design for Study 1: 3 (MVPE, Giving-SVPE, Exchange-SVPE) × 2 (story building, data collection) ×



**Figure 1**  
**Research model**

2 (self-imagery, other-imagery). In total, 310 participants are randomly assigned to the 12 groups of situations. For Study 2 we have: 2 (MVPE-FB, MVPE-Pinterest)  $\times$  2 (story building, data collection)  $\times$  2 (self-imagery, other-imagery). In total, 194 participants are randomly assigned to the 8 groups of situations, with participants randomly and equally assigned into one of them.

## 4.2 Participants

Students in general universities, colleges, and postgraduate schools are used as the main research subjects, where priority is given to those with more than 6 months of experience in a network community and engaging in brand communities. In total, we recruited 504 participants for this experiment. Participants are randomly assigned to situation groups (see Table 1). Each participant is tested individually. The effects of different VPE types and different social media platforms on advertisement effects (brand attitude and purchase intention) are analyzed by a MANOVA test using Wilks' Lambda. This study

**Table 1**  
**Number of participants in each condition group**

	Story building		Data collection	
	Self-imagery	Other-imagery	Self-imagery	Other-imagery
Study 1: (n = 310)				
MVPE	Group 1 (24)	Group 2 (23)	Group 3 (24)	Group 4 (29)
Giving-SVPE	Group 5 (26)	Group 6 (22)	Group 7 (28)	Group 8 (26)
Exchange-SVPE	Group 9 (27)	Group 10 (24)	Group 11 (29)	Group 12 (28)
Study 2: (n = 194)				
MVPE-FB	Group 1 (24)	Group 2 (23)	Group 3 (24)	Group 4 (29)
MVPE-Pinterest	Group 5 (27)	Group 6 (22)	Group 7 (21)	Group 8 (24)

Note: (n) is number of participants.

employs MANOVA to test all the proposed hypotheses.

### 4.3 Stimulus materials

Study 1 incorporates the experiment's different imagery-processing models and imagery instructions to determine the correlations among MVPE, Giving-SVPE, Exchange-SVPE, and advertisement effects. The participants are randomly assigned to one of three sessions presented in Figure 2.

(1) MVPE-(FB): In this experimental scenario, the profile image of the member displays the image of consumers visiting the restaurant (e.g., eating a hamburger or french fries). The webpage presents limited personal information on the member (e.g., age or gender).

(2) Giving-SVPE (FB): In this experimental scenario, the profile image of the fan is a friend of the participant. In this type of SPVE, the fan posts a comment, and the fan page administrator then replies to the fan in a friendly manner. The post garners many "likes" and numerous responses. The fan group administrator replies to each fan individually to create a giving experience.

(3) Exchange-SVPE (FB): In this experimental scenario, the profile images of the fans are presented similarly to that in the Giving-SVPE scenario. The fans share an activity with the fan group, are encouraged by other community members to partake in the activity, and explain the activity participation method, thereby creating an exchange experience.

In order to manipulate the experiment, this research follows Jiang *et al.* (2014) and modifies the imaginary instruction and imagery processing models. We instructed the participants to translate the process of using the product into a story that can be shared with others; the participants collected product-related information as much as possible and were required to integrate themselves or others into their imagination. They were then given an example later (such as, “in your imagination you can see yourself (or see others) using the product”) to ensure that the task is consistent with the integration effect that this research intends to establish.

Study 2 combines the experiment MVPE on different social media platforms (MVPE-FB/MVPE-Pinterest) with different imagery instructions and imagery-processing models, thereby producing different advertisement effects. The participants are randomly assigned to one of two sessions presented in Figure 3 and instructed to browse the web. The experimental procedures are the same as in Study 1.

#### **4.4 Stimulus materials**

This experiment is conducted on a website, with data collected by a survey social network platform. The subjects are required to link to the experimental website, and the experiment process is conducted via an online questionnaire. First, the research procedure is explained to the participants, and they are requested to register on the website. Second, when participants connect to the experiment site (Heroku), Facebook asks them to download the program. If the participants agree to the authorization, then Facebook returns a list of friends, pictures, and names. Third, the participants are randomly assigned to one of three sessions and instructed to browse the web. Finally, the participants respond to the

(a)



(b)



(c)



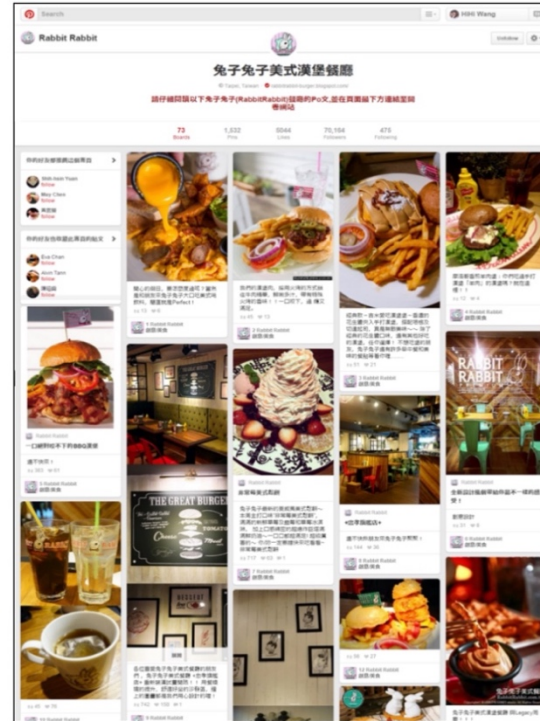
Note: (a) MVPE-(FB), (b) Giving-SVPE (FB), (c) Exchange-SVPE (FB).

**Figure 2**  
**Study 1: Design of different VPE types of experimental situations on Facebook**

(a)



(b)



Note: (a) MVPE-FB, (b) MVPE-Pinterest.

Figure 3  
Study 2: Design MVPE types of experimental situation on Facebook and Pinterest

scale of imagery instructions, imagery-processing models, brand attitude, and purchase intention.

#### **4.5 Non-response bias and common method variance**

*Non-response bias.* This study uses Pearson's chi-square testing for cross-tabulation to analyze the randomization of the main characteristics (e.g., gender, age, level of education, occupation, and use experience on the Facebook fan group), in order to verify that they do not interfere with the randomness of the test group assignment (Table 4). Therefore, the problem of response bias is not an issue in this study.

*Common method variance.* This study tests for common method variance using Harman's single-factor test (Podsakoff *et al.*, 2003) and follows the suggestions of Delerue and Lejeune (2010) regarding the total variance explained for one common factor, meaning below the cut-off point of 50%. The result accounts for 34.26% of the variance, which confirms that the common method bias in the dataset is acceptable.

#### **4.6 Questionnaire design and measures**

*Experimental brand types.* Daugherty *et al.* (2008) suggested that a research product should contain both search and experience attributes when comparing the effects of consumer experiences. Bone and Allen (1992) stated that advertisement imagery belongs to high perception products (e.g., olfactory, taste, visual, and auditory), such as videos, perfumes, and desserts. Hence, this study applies product experience, which is perception-oriented. Restaurants have these features, and therefore restaurants are selected as the research product in the current study. In order to measure brand types, based on participants' memory we ask them to respond to: "I think the meal is of good quality", and "I am very familiar with the meal" (Daugherty *et al.*, 2008). This research conducts pre-testing through 5 brands: Bistro Together, The Dinner, Rabbit Rabbit, NY Bagel, and Second Floor Cafe; using 34 students as the pre-test samples. This experiment employs a seven-point Likert scale (1 = strongly disagree to 7 =

strongly agree) and Duncan multiple comparison analysis. The results lead to the selection of the “Rabbit Rabbit brand”.

*VPE types.* According to the items regarding MVPE in Naylor *et al.* (2012) and SVPE in Skågeby (2010), this research conducts revisions and item reductions of the contents in this experiment and uses a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree) for measurement.

*Imagery instructions and imagery-processing models:* This study conducts a manipulation check of imagery instructions and imagery-processing models according to four items based on the literature (Jiang *et al.*, 2014). The first two items query the subjects during the process of browsing the web, concerning the formation of self-imagery or other-imagery. The second two items measure the subjects in the heart of the fluency of imagery-processing. This research conducts revisions and item reductions of the contents in this experiment and uses a nine-point Likert scale (1 = strongly disagree to 9 = strongly agree) for measurement.

*Advertising Effect.* Brand attitudes measuring four items are adopted from Raman (1996), and this study adopts a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree). Purchase intention measures three items adapted from Holzwarth *et al.* (2006), and we adopt a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree). The manipulation checks and measures are listed in Table 2.

**Table 4**  
**Chi-square test of independence demographic variables**

	Study 1 (n = 310)			Study 2 (n = 194)		
	value	df	<i>p</i> -value	value	df	<i>p</i> -value
Gender	3.894	2	0.143	0.608	1	0.436
Age	10.121	10	0.405	1.495	5	0.914
Education	3.308	6	0.769	2.047	4	0.727
Occupation	20.366	12	0.060	2.398	5	0.663
Use experience (FB)	6.932	10	0.732	3.385	5	0.641



**Table 2**  
**Manipulation checks and measures items**

Measurement items	Reference
<b>MVPE:</b>	
(1) After seeing the “Rabbit Rabbit brand” image of other fans, I noticed that other fans use the brand product of experience.	Naylor <i>et al.</i> (2012)
(2) After seeing the “Rabbit Rabbit brand” image of other fans, I feel that the other fans prefer this brand product.	
<b>Giving-SVPE:</b>	
(1) According to that photo, you want to share your product photos through a Fan Page and get to know peoples’ feelings and interactions with each other.	Belk (2010), Skågeby (2010)
(2) According to that photo, you think that being motivated by the upload product photo that viewers may want to interact with each other, reply to the message, or want to receive some “Likes”.	
(3) According to that photo, you think that a Fan Page upload product photo providing related information may be in order to share Word-of-Mouth or discount information to provide product selection in the future.	
<b>Exchange-SVPE:</b>	
(1) According to that uploaded photo related to a product from a FB friend, you think his/her main purpose is to convey product information or a discount.	Jiang <i>et al.</i> (2014)
(2) According to that photo, the aim is to share product behavior from friends; you think this is mutually beneficial.	
(3) According to that uploaded product photo, you think that it offers product information from friends that may benefit them.	
<b>Imagery instructions:</b> (Cronbach’s $\alpha = 0.81$ , CR = 0.92, AVE = 0.84)	
(1) Just in the imagination process, I can clearly see myself in the situation.	Jiang <i>et al.</i> (2014)
(2) Just in the imagination process, I can clearly see other people in the situation.	
<b>Imagery-processing models:</b> (Cronbach’s $\alpha = 0.85$ , CR = 0.93, AVE = 0.87)	
(1) In the process of browsing, I can experience self-imagery/other-imagery in the consumption situation in the restaurant, and I can build a story.	Jiang <i>et al.</i> (2014)
(2) On the website, the image is presented to stimulate my imagination and to help me frame a consumption situation in my mind.	
<b>Brand attitude:</b> (Cronbach’s $\alpha = 0.90$ , CR = 0.77, AVE = 0.88)	
Please make the following evaluation of the product brand on this website:	
(1) no preference/preference	Raman (1996)
(2) dislikable/likable	
(3) bad/good	
(4) no attraction/attraction	
<b>Purchase intention:</b> (Cronbach’s $\alpha = 0.92$ , CR = 0.87, AVE = 0.93)	
After watching the discussion, please answer the following questions according to your own real feelings:	
(1) I expect to buy “Rabbit Rabbit brand” products.	Holzwarth <i>et al.</i> (2006)

Measurement items	Reference
(2) In my next purchase of such products, I will consider the “Rabbit Rabbit brand” and may buy it.	
(3) I am very interested in purchasing “Rabbit Rabbit brand” products.	

Note: CR = Composite reliability, AVE = Average variance extracted.

## 5. Results

### 5.1 Sampling

In Study 1, a total of 320 subjects formally participated in the experiment, and 310 formal valid samples are derived after deleting samples with random answers. In Study 2, a total of 207 subjects formally participated in the experiment, and 194 formal valid samples are derived after deleting samples with random answers. The demographic statistical data in terms of age are consistent with the report of TWNIC (2020), indicating good representativeness of our data. Detailed descriptive statistics are shown in Table 3.

### 5.2 Reliability and validity

The results appear in Table 2. Nunnally (1978) asserted that a Cronbach’s  $\alpha$  value of 0.5 or higher denotes acceptable reliability, and that a value between 0.7 and 0.98 denotes superior reliability (Nunnally and Bernstein, 1994). The imagery instruction scale ( $\alpha = 0.81$ ), imagery-processing model scale ( $\alpha = 0.85$ ), brand attitude scale ( $\alpha = 0.90$ ), and purchase intention scale ( $\alpha = 0.92$ ) of this study achieve a Cronbach’s  $\alpha$  value greater than 0.7, indicating that the entire questionnaire achieves superior consistency and stability. The composite reliability (CR) values for the constructs are higher than 0.77, or all greater than the suggested cut-off value of 0.70 (Hair *et al.*, 1998). The average variance extracted (AVE) values range from 0.84 to 0.93, exceeding the recommended value of 0.50 (Fornell and Larcker, 1981). All the remaining constructs showed good internal and consistency reliability.

### 5.3 Manipulation check

**Table 3**  
**Main characteristics of the sample**

Characteristic	Item	Study 1 (n = 310)		Study 2 (n = 194)	
		Frequency	(%)	Frequency	(%)
Gender	Male	102	32.9	73	37.6
	Female	208	67.1	121	62.4
Age	0-19	69	22.3	41	21.1
	20-25	195	62.9	114	58.8
	26-30	33	10.6	26	13.4
	31-35	8	2.6	7	3.6
	36-40	2	0.6	3	1.5
	Over 40	3	1.0	3	1.5
Education	Junior high school	10	3.2	6	3.1
	Senior high school	27	8.7	14	7.2
	College	195	62.9	123	63.4
	Graduate school	78	25.2	51	26.3
Occupation	Business	20	6.5	9	4.6
	Technology	11	3.5	14	7.2
	Advertisement	5	1.6	0	0
	Military/Government/Educational	11	3.5	5	2.6
	Service	19	6.1	17	8.8
	Student	222	71.6	137	70.6
	Other	22	7.1	12	6.2
Use experience (FB)	0-1 month	18	5.8	12	6.2
	1-3 months	11	3.5	7	3.6
	3-6 months	7	2.3	6	3.1
	6-12 months	19	6.1	9	4.6
	1-3 years	78	25.2	56	28.9
	Over 3 years	177	57.1	104	53.6
Use experience (Pinterest)	0-1 month	-	-	77	81.9
	1-3 months	-	-	2	2.1
	3-6 months	-	-	6	6.4
	6-12 months	-	-	5	5.3
	1-3 years	-	-	4	4.3
	Over 3 years	-	-	0	0

To verify whether the effects of VPE types are successfully manipulated, eight manipulation evaluation items are applied concerning MVPE, Giving-SVPE, and Exchange-SVPE. One-way ANOVA testing shows significant differences for the experimental website in Table 5. The results for MVPE ( $p = 0.037 < 0.05$ ),

Giving-SVPE ( $p = 0.021 < 0.05$ ), and Exchange-SVPE are all significant ( $p = 0.00 < 0.01$ ). Table 6 lists the significant manipulation results of an independent sample t-test for imagery instruction ( $p = 0.029 < 0.05$ ) and imagery-processing models ( $p = 0.039 < 0.05$ ). Thus, the manipulation of VPE types, imagery instructions, and imagery-processing models is successful. The effectiveness of the web page scenarios is confirmed.

#### 5.4 Study 1 hypotheses verification

The MANOVA analysis results in Table 7 reveal that the different types of virtual brand communities and the imagery-processing model of the self-imagery group ( $p = 0.042 < 0.05$ ) and other-imagery group ( $p = 0.038 < 0.05$ ) exert a significantly interactive influence on the advertisement effect. However, only the purchase intention achieves a significant difference ( $p = 0.012 < 0.05$ ;  $p = 0.017$

**Table 5**  
**One-way ANOVA for the manipulation of VPE types**

Group	Item	Sample	Mean	SD	F-value	p-value
MVPE	MVPE	194	5.49	0.884	3.338	0.037*
	Giving-SVPE	102	5.21	0.981		
	Exchange-SVPE	108	5.38	0.813		
Giving-SVPE	MVPE	194	5.55	0.755	3.899	0.021*
	Giving-SVPE	102	5.78	0.773		
	Exchange-SVPE	108	5.75	0.840		
Exchange-SVPE	MVPE	194	4.84	0.809	8.035	0.000**
	Giving-SVPE	102	5.01	0.919		
	Exchange-SVPE	108	5.25	0.894		

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , and SD = Standard deviation.

**Table 6**  
**T-test values of imagery instructions and imagery-processing models' manipulation**

	Group	Mean	SD	t-value	p-value
Imagery instructions	Self-imagery	6.54	1.567	2.188	0.029*
	Others-imagery	6.17	1.846		
Imagery-processing models	Story building	5.17	0.949	2.073	0.039*
	Data collection	4.96	1.126		

Note: \*  $p < 0.05$ , and SD = Standard deviation.

< 0.05). The results are in Table 8. Therefore, H1 and H2 are partially supported.

As shown in Figure 4, when self-imagery is paired with story building, Giving-SVPE induces a more favorable purchase intention; hence, H1a is rejected. When self-imagery is paired with data collection, Exchange-SVPE induces greater purchase intentions; therefore, H1b is partially supported. As shown in Figure 5, when other-imagery is paired with story building, Giving-SVPE induces greater purchase intention. Accordingly, H2a is partially supported. When other-imagery is paired with data collection, MVPE attains higher purchase intention; hence, H2b is rejected.

MANOVA analysis is administered to examine the effects of VPE types, imagery instructions, and imagery-processing models on the advertisement effect. The results reveal a significant three-factor interactive effect ( $p = 0.007 < 0.01$ ; Table 9). Because the interaction effects of VPE types, imagery instructions, and imagery-processing models are significant, we examine the means of the cells by performing a post hoc Scheffe test (Table 10). Moreover, the purchase intentions in the three sets of community scenarios differ significantly ( $p = 0.001 < 0.01$ ; Table 11). Accordingly, H3 is partially supported. These results imply that different imagery-processing models generate different preferences toward online brand community types of dissimilar imagery instructions, thereby affecting their purchase intentions.

**Table 7**

**Study 1: Results of MANOVA for imagery-processing models and VPE types**

Group	Wilks' Lambda	Wilks's L	F-value	p-value
Self-imagery group	VPE types	0.971	1.099	0.357
	Imagery-processing models	0.986	1.091	0.339
	VPE types × imagery-processing models	0.937	2.508	0.042*
Other-imagery group	VPE types	0.991	0.319	0.865
	Imagery-processing models	0.985	1.136	0.324
	VPE type × imagery-processing models	0.933	2.567	0.038*

Note: \*  $p < 0.05$ .

**Table 8**  
**Study 1: Results of MANOVA on the advertisement effect**

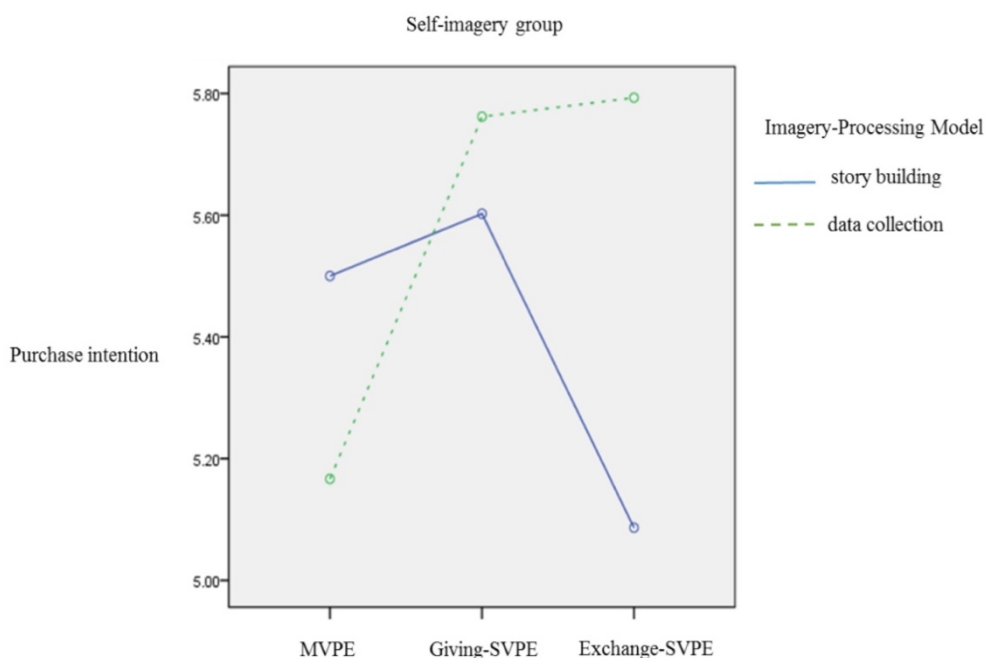
Group	DV	VPE types × Imagery-processing models		Mean	SE	<i>p</i> -value
Self-imagery group	Brand attitude	MVPE	Story building	5.38	0.869	0.106
			Data collection	5.12	1.163	
		Giving-SVPE	Story building	5.27	1.198	
			Data collection	5.66	0.708	
		Exchange-SVPE	Story building	4.99	1.097	
			Data collection	5.52	0.840	
	Purchase intention	MVPE	Story building	5.50	0.885	0.012*
			Data collection	5.16	1.049	
		Giving-SVPE	Story building	5.60	0.618	
			Data collection	5.76	0.769	
Other-imagery group	Brand attitude	MVPE	Story building	5.27	0.859	0.392
			Data collection	5.67	0.851	
		Giving-SVPE	Story building	5.72	0.853	
			Data collection	5.60	1.194	
		Exchange-SVPE	Story building	5.40	0.651	
			Data collection	5.56	1.099	
	Purchase intention	MVPE	Story building	5.26	0.797	0.017*
			Data collection	5.86	0.819	
		Giving-SVPE	Story building	5.98	0.813	
			Data collection	5.49	1.300	
Exchange-SVPE	Story building	5.65	0.602			
	Data collection	5.55	1.163			

Note: \*  $p < 0.05$ , DV = Dependent variable, and SE = Standard error.

## 5.5 Study 2 hypotheses verification

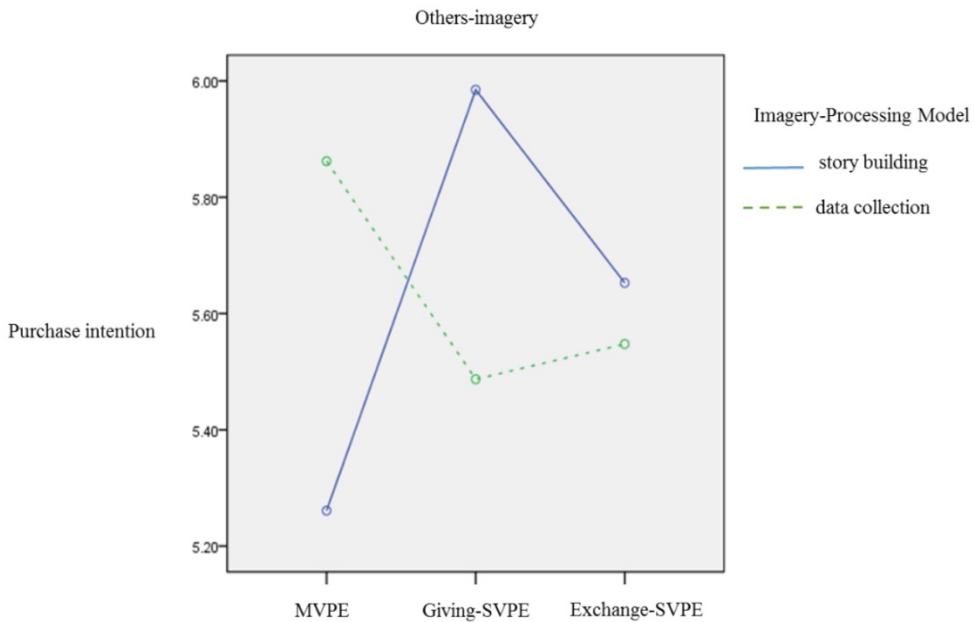
The MANOVA analysis results reveal that the different types of social media platforms and imagery-processing models of the self-imagery group attain a non-significant interactive effect ( $p = 0.115 > 0.05$ ; Table 12). Only purchase intentions achieve a significant difference ( $p = 0.046 < 0.05$ ; Table 13); therefore, H4 is partially supported. As shown in Figure 6, when self-imagery is paired with story building, MVPE-FB induces greater purchase intention. Consequently, H4a is partially supported. When self-imagery is paired with data collection, MVPE-Pinterest induces greater purchase intention; hence, H4b is partially supported.

The MANOVA analysis results next reveal that the different types of social media platforms and imagery-processing models attain a significantly interactive



**Figure 4**

**Study 1: The purchase intention of the self-imagery group**



**Figure 5**

**Study 1: The purchase intention of the other-imagery group**

**Table 9**

**Study 1: Results of MANOVA**

Wilks' Lambda	Wilks' L	F-Value	p-value
VPE types	0.984	1.177	0.320
Imagery instructions	0.987	1.889	0.153
Imagery-processing models	0.990	1.479	0.230
VPE types × Imagery instructions	0.998	0.166	0.956
VPE types × Imagery-processing models	0.982	1.383	0.238
Imagery instructions × Imagery-processing models	0.997	0.428	0.652
VPE types × Imagery instructions × Imagery-processing models	0.953	3.591	0.007**

Note: \*\*  $p < 0.01$ .



**Table 10**  
**Study 1: Results of post-hoc analyses**

DV	Group I	Group J	Mean (I – J)	SE	<i>p</i> -value
Brand attitude	MVPE	Giving-SVPE	-0.192	0.118	0.270
		Exchange-SVPE	-0.006	0.116	0.999
	Giving-SVPE	MVPE	0.192	0.118	0.270
		Exchange-SVPE	0.186	0.134	0.380
	Exchange-SVPE	MVPE	0.006	0.116	0.999
		Giving-SVPE	-0.186	0.134	0.380
Purchase intentions	MVPE	Giving-SVPE	-0.306*	0.119	0.038*
		Exchange-SVPE	-0.128	0.117	0.549
	Giving-SVPE	MVPE	0.306*	0.119	0.038*
		Exchange-SVPE	0.178	0.134	0.418
	Exchange-SVPE	MVPE	0.128	0.117	0.549
		Giving-SVPE	-0.178	0.134	0.418

Notes: Scheffe is used in the post-hoc analysis, and \*  $p < 0.05$ . DV = Dependent variable, and SE = Standard error.

**Table 11**  
**Study 1: Results of MANOVA on the advertisement effect**

Wilks' Lambda	DV	Type III SS	df	Mean SS	<i>F</i> -value	<i>p</i> -value
VPE types × Imagery instructions ×	Brand attitude	5.107	2	2.554	2.731	0.067
Imagery-processing models	Purchase intentions	11.815	2	5.908	6.994	0.001**

Note: \*\*  $p < 0.01$ , and DV = Dependent variable.

effect ( $p = 0.035 < 0.05$ ; Table 12), and that both brand attitude ( $p = 0.050$ ) and purchase intentions ( $p = 0.009 < 0.01$ ) achieve significant differences (Table 13); therefore, H5 is supported. As shown in Figs. 7 and 8, when other-imagery is paired with story building, MVPE-Pinterest induces greater brand attitude; however, no significant difference is exhibited in purchase intention; therefore,

**Table 12**  
**Study 2: Results of MANOVA for imagery-processing models and social media**

Group	Wilks' Lambda	Wilks' L	F-value	p-value
Self-imagery	Social media	0.997	0.154	0.857
	Imagery-processing models	0.998	0.083	0.920
	Social media × Imagery-processing models	0.954	2.217	0.115
Others-imagery	Social media	0.970	1.427	0.245
	Imagery-processing models	0.998	1.080	0.923
	Social media × Imagery-processing models	0.930	3.488	0.035*

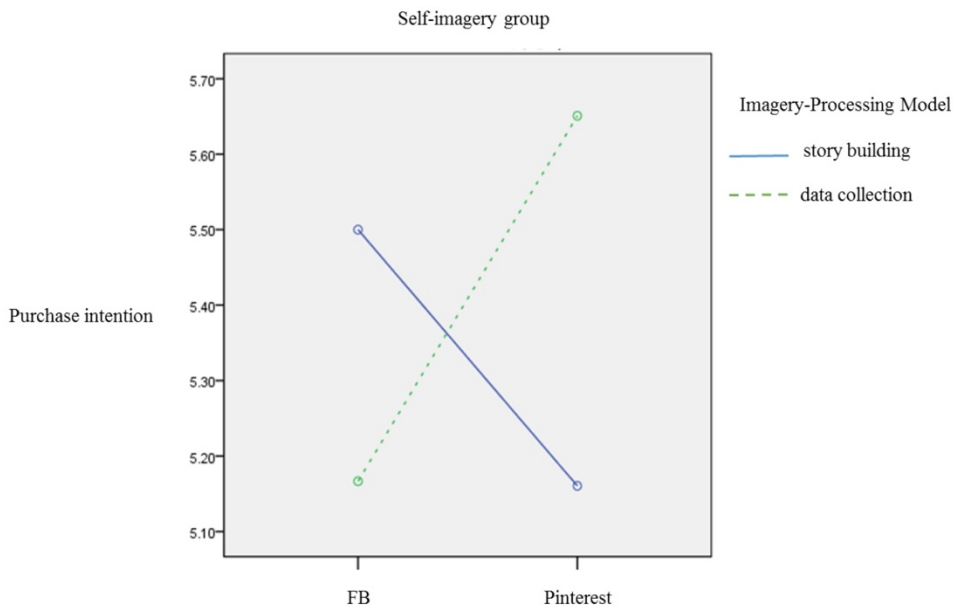
Note: \*  $p < 0.05$ .

**Table 13**  
**Study 2: Results of two-way ANOVA on the advertisement effect**

Group	DV	Social media × Imagery-processing models	Mean	SE	p-value		
Self-imagery	Brand attitude	MVPE-FB	Story building	5.38	0.869	0.134	
			Data collection	5.12	1.163		
	MVPE-Pinterest	Story building	5.17	1.254			
		Data collection	5.56	0.798			
	Purchase intention	MVPE-FB	Story building	5.50	0.885		0.046*
			Data collection	5.17	1.049		
Others-imagery	Brand attitude	MVPE-FB	Story building	5.27	0.859	0.050*	
			Data collection	5.67	0.851		
	MVPE-Pinterest	Story building	5.51	0.785			
		Data collection	5.24	0.826			
	Purchase intention	MVPE-FB	Story building	5.26	0.797		0.009**
			Data collection	5.86	0.819		
MVPE-Pinterest	Story building	5.48	0.840				
	Data collection	5.03	1.369				

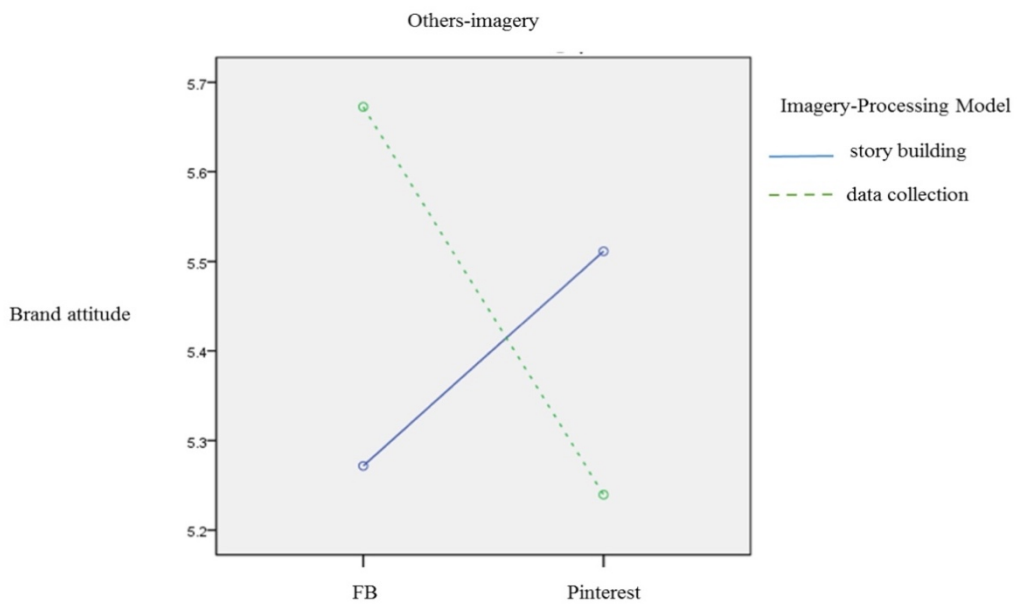
Note: \*  $p < 0.05$ , \*\* $p < 0.01$ , DV = Dependent variable, and SE = Standard error.

H5a is partially supported. When other-imagery is paired with data collection, MVPE-FB induces a more favorable brand attitude and purchase intention;



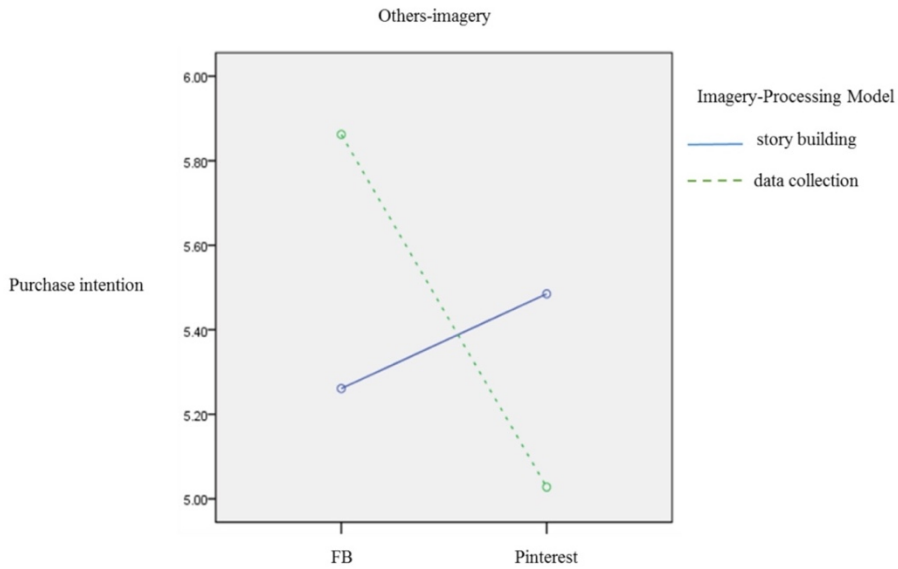
**Figure 6**

**Study 2: Purchase intention of the self-imagery group**



**Figure 7**

**Study 2: Brand attitude of the others-imagery group**



**Figure 8**

**Study 2: Purchase intention of the other-imagery group**

accordingly, H5b is supported.

The results of MANOVA analysis on how the different types of social media platforms, imagery instructions, and imagery processing models influence the advertisement effects reveal significant three-factor interactive effects ( $p = 0.004 < 0.01$ ; Table 14). Moreover, brand attitude ( $p = 0.016 < 0.05$ ) and purchase intention ( $p = 0.001 < 0.01$ ) achieve significant differences ( $p = 0.001 < 0.01$ ; Table 15); accordingly, H6 is supported. These results imply that consumers who are given different imagery instructions use different imagery processing models when viewing online brand communities, thereby influencing their brand attitude and purchase intentions.

## 6. Discussion

### 6.1 Summary of the findings

The empirical results herein confirm that the complexity of the information

**Table 14**  
**Study 2: Results of MANOVA**

Wilks' Lambda	Wilks' L	F-value	p-value
Social media	0.994	0.555	0.575
Imagery instructions	0.995	0.420	0.658
Imagery-processing models	0.998	0.161	0.851
Social media × Imagery instructions	0.991	0.871	0.420
Social media × Imagery-processing models	0.999	0.114	0.892
Imagery instructions × Imagery-processing models	1	0.000	1
Social media × Imagery instructions × Imagery-processing models	0.943	5.616	0.004**

Note: \*\* p < 0.01.

**Table 15**  
**Study 2: Results of MANOVA on the advertisement effect**

Source	DV	Type III SS	df	Mean SS	F-value	p-value
Social media × Imagery instructions × Imagery-processing models	Brand attitude	5.277	1	5.227	5.869	0.016*
	Purchase intentions	10.633	1	10.633	10.880	0.001**

Note: \* p < 0.05 and \*\* p < 0.01.

displayed on web pages influences consumers' mental imagery when viewing product advertisements. Under different imagery instructions, the participants that engaged in self-imagery and those that engaged in other-imagery do perceive different VPE types when browsing the social media platforms. These VPE types influence the participants' brand attitudes and purchase intention.

The results obtained from Study 1 indicate that when community members engage in story building, they imagine how they or their friends use an advertised product. These members exhibit favorable purchase intentions in the Giving-SVPE scenario, implying that the posting and sharing of product and service information on fan pages, as well as the interaction between fan page operators and consumers, facilitate consumers to mentally organize the

information into a story or imagine their purchase situations, thereby positively influencing the advertisement effects.

This study finds that H1a is not supported in Study 1. When consumers engage in self-imagery to build a story, MVPE does not significantly influence the advertisement effect, because when consumers engage in self-imagery to build a story, the situation with higher information complexity will reduce the effect of self-imagination. In addition, moderate word-of-mouth information in the community can increase consumers' desire to buy the product. Participants who engage in self-imagery exhibit favorable purchase intentions in the Giving-SVPE scenario.

Study 1 presents that H2b is also not supported. When consumers engage in other-imagery to collect data, Exchange-SVPE does not significantly impact advertising effects, but rather MVPE has the highest advertisement effects compared to those from Exchange-SVPE and Giving-SVPE. That is consistent with Naylor *et al.* (2011) who showed that consumers use an accessibility-based egocentric anchor to infer that ambiguous reviewers have similar tastes to their own, leading those consumers to be more persuaded by reviews written by ambiguous reviewers than by reviews written by dissimilar reviewers.

Study 2 shows the MVPE scenario is applied to the effects for the differences between Facebook and Pinterest on advertising influences. In particular, participants who engage in self-imagery to formulate a story exhibit more favorable purchase intentions on Facebook. Those who engage in self-imagery to collect data show more favorable purchase intentions on Pinterest. The participants' brand attitude does not attain significant difference. The food images used in the present study effectively attracted the interest of consumers and stimulated their desire to eat, but these images are less effective in triggering consumers' feelings towards the brand. The advertisements used in the present study have a greater effect on attracting consumers to the product than to the brand. Therefore, the advertisement effects have a more obvious influence on purchase intentions than on brand attitude.

## 6.2 Theoretical implications

This paper offers several theoretical contributions. First, we extend the previous work on MVPE and SVPE, in which the three forms of VPE types can be combined into advertisement effects (Belk, 2010; Naylor *et al.* 2012; Skågeby, 2010). Second, various social media platforms are analyzed to determine the differences in advertisement effects. Third, this current study also uses imagery instructions and imagery-processing models as the moderating variables, confirming the moderating effect between different combinations of VPE types and social media platforms. Fourth, the results of the present study reinforce the concepts proposed by Jiang *et al.* (2014), who contended that companies' efforts toward constantly circulating a diverse range of product information to their consumers may be ineffective at enhancing consumers' product preferences. If consumers mentally form a series of images concerning the product after viewing an advertisement, then such a diverse range of information could instead reduce advertisement effects.

## 6.3 Managerial implications

From these results, our study generates some potentially important insights for brand communities' managers. Consumers who have joined a brand community observe others on social media platforms to obtain more information, which can increase the possibility of them purchasing commodities. Brand communities' managers can edit community documents according to different types of products or different purposes of community advertising and then form social context interactions by offering consumers the opportunity to share their experience in using products or forward other fans' thoughts after the purchase. These managers can then respond to the consumer feedback section in the lower part of the webpage to establish closer ties with customers. When community consumers are in the Giving-SVPE situation of constructing stories through imagination, enterprises are suggested to use highly emotional community texts as well as picture advertising and stories to motivate these community consumers

to watch community advertising, in order to deepen their understanding of products. When they are in the Exchange-SVPE situation and imagine they are using the products and collecting brand information, enterprises are suggested to offer diverse product information when publishing articles in brand communities, in order to meet consumers' needs for information. When community consumers are in the MVPE situation and imagine that others are using the products and collecting brand information, enterprises are suggested to focus the respondents' attention on the advertising information through the task introduction of the instruction page of the brand community.

Our findings apply to combinations of both content and imagination instruction of consumers' imagery processing modes. Advertisers can use stories imagined by themselves or others to motivate consumers to collect information or construct stories, which would help make the advertising more persuasive. For example, pictures or videos of the community can be integrated with the information of written advertising to evoke highly emotional responses. Such imagery operation is especially suitable for "highly-perceivable products" (Bone and Allen, 1992). As highly perceptive products have sensory features, they are more effective in creating scenes in consumers' minds. The imaginary use of products can trigger personal experience and influence the evaluation of brand products. Due to the advent of new community media, consumers may have different purposes for using different social media platforms. Therefore, this study suggests that enterprises should select operations on different platforms and apply the above methods to become acquainted with consumers' use intentions. For example, enterprises can offer pictures showing consumers making hamburgers into the operation of Pinterest to trigger personal experiences, which can strengthen the personal purchase intention of products. In addition, Facebook emphasizes graphic information and interpersonal connections; thus, enterprises can share information through the combination of pictures and written information through Facebook's platform.



## 6.4 Limitations and future research

This research has several limitations. First, the selection of products only focuses on 5 restaurants, which were selected as the research object in this study. Future studies can focus on different products and conduct different comparisons, such as search products, experiential products, and credence products. Second, Pinterest was selected as one of the social media platforms examined in Study 2. Its popularity and level of use in Taiwan are lower than those in other countries, which could affect the results obtained herein. Subsequent studies can consider selecting a social media platform that is popular and economically beneficial in Taiwan as the research platform. Third, the design of the experimental situation MVPE type does not control the same image number and image type, which are likely to affect consumers' virtual product experience. Future studies should consider a stricter experiment method. Finally, this study does not address demographic variables, and as such future studies can further analyze the background and characteristics of each research.

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