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Imagining Yourself in the Scene: The Interactive Effects of Goal-Driven Self-Imagery and Visual Perspectives on Consumer Behavior

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Consumers often imagine themselves in a scene and engage in such self-imagery while processing information. The goals that they have when they engage in such imagery (e.g., a goal to construct a story of the experience vs. a goal to acquire information) can influence how the mental images they generate affect judgments. When pictures from very different perspectives are provided, those trying to imagine themselves in the scene in order to create a story of the experience have to shift visual perspectives in order to imagine the entire experience. This shift in visual perspective can increase processing difficulty and decrease evaluations of the product or service being described. When individuals are simply imagining themselves acquiring information about the product or service, however, presenting information from different perspectives has a positive impact on evaluations. Four experiments confirmed these effects and the assumptions underlying their conceptualization.

John Lennon's iconic song "Imagine" has often echoed across the world, and his words urging people to imagine a different world still resonate with many. Interestingly, the word "imagine" is somewhat ambiguous; it could just as easily mean "suppose" (i.e., consider a hypothetical situation) or "form a mental image" (i.e., visualize or engage in mental imagery). Moulton and Kosslyn (2009) point out that this ambiguity is indicative of how often imagery is used in the service of supposing. They suggest that imagery has a functional role and is used, in part, to "suppose" and solve problems, to tell stories, to predict an event's occurrence, and to reconstruct the past. For many years, this role was obscured by a debate that questioned the very existence of imagery (Kosslyn, Ganis, and Thompson 2001, 2006; Paivio 1971, 1986; Pylyshyn 1973; Taylor and Schneider 1989). Given recent research in cognitive neuroscience that provides incontrovertible evidence for the existence of imagery (Kosslyn et al. 2001, 2006), the focus has shifted once again to understanding how imagery can help or hinder in the performance of certain tasks. The current research is motivated by such a functional approach to imagery and focuses on situations in which consumers engage in self-imagery (i.e., imagine themselves in the scene) in the pursuit of some objective or goal.

In consumer research, imagery has been used to urge

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consumers to imagine an experience (e.g., to picture oneself using a product or service), implicitly assuming that imagined interactions with a product are a powerful persuasion tactic (Bone and Allen 1992; Dahl, Chattopadhyay, and Gorn 1999; Escalas 2004, 2007). Several moderators have been identified, including the type of information on which imagery is based (Adaval and Wyer 1998), the ease with which the images can be generated (Petrova and Cialdini 2005), the extent to which one incorporates oneself into the imagery (Dahl and Hoeffler 2004), and the perspective one takes while generating images (Hung and Wyer 2009; Jiang and Wyer 2009; Meyers-Levy and Peracchio 1992). However, this research is relatively silent with regard to the goals that consumers have when they engage in self-imagery. This brings us back to the issue raised earlier: Can self-imagery have different effects when consumers engage in it for different purposes?

We examine two goals that consumers have when they engage in self-imagery: forming a story of the consumption experience or acquiring information about this experience. Such goals might be activated while watching television, browsing, or searching for information on the Internet (Rosenblatt 1978; Schlosser 2003). Consider, for instance, how consumers pick a resort to stay at during a vacation. People who are motivated to construct a story of the anticipated consumption experience typically imagine themselves in different locations of the resort and use these images to create a single narrative-like representation of the experience as a whole (Adaval and Wyer 1998; Escalas 2004). In contrast, people who use imagery to acquire information typically generate mental images of themselves experiencing different aspects of the resort but do not necessarily link them together. Rather, they might hold these images independently in memory. Although images are components of the mental representations that consumers form in the course of pursuing both of these self-imagery goals, the way they come into play and their consequent impact on judgments and memory are likely to differ.

To distinguish between the image-based representations that are formed as a function of the two aforementioned self-imagery goals, we used the construct of "visual perspectives" to show how their effects might differ. Most images are imagined from a specific visual perspective. For example, a picture of the White House might elicit a mental image from the perspective of someone who views it from the outside. With this in mind, we gave participants advertisements containing multiple pictures of a resort hotel that were taken from either a similar visual perspective (e.g., only pictures of interiors or pictures of exteriors were featured in the ad) or a different visual perspective (e.g., pictures of both interiors and the exterior were featured in the ad). We asked them to imagine themselves interacting with the product/service shown with the goal of either (*a*) forming a narrative of the experience they would likely have or (*b*) acquiring information about it. We expected that mental images generated from different visual perspectives would be harder to integrate than images from similar perspectives when participants attempt to form a story or narrative of the experience as a whole for two reasons. First, participants would have to shift their visuospatial location as they imagine themselves in different locations. Second, these images would have to be reorganized to make a temporally ordered sequence that makes sense. However, images from different perspectives would not pose any difficulty in processing when the goal is to collect information because these images do not have to be integrated into a temporally ordered sequence and can be held independently in memory. We therefore hypothesized that difficulty in processing images from different perspectives would have a negative impact on people's judgments of the information if they have a goal to engage in imagery for the purpose of constructing a narrative but that it might have no effect or even a beneficial effect if they have the goal of acquiring information.

Four experiments investigated these possibilities and confirmed our hypotheses and the assumptions underlying it. In doing so, they provided important insights about the role played by goal-directed self-imagery. To our knowledge, the current research is the first to examine how the goals underlying self-imagery can create subjectively different experiences that have a positive or negative effect on evaluations. Second, this research provides empirical evidence of the different types of representations that might be formed in the course of pursuing different self-imagery goals and confirms the effects of constructing these representations on judgments. This was accomplished using multiple methods (e.g., eye-tracking and memory data) that have not previously been brought to bear on these matters.

IMAGERY: A FUNCTIONAL VIEW

Imagery is a quasi-perceptual experience that involves the generation of picture-like representations in the mind (Kosslyn 1976). The generation of such picture-like representations in memory (i.e., mental images) is common in consumption contexts (MacInnis and Price 1987) as advertisers often use attractive photographs and imagery-evoking language to encourage consumers to imagine themselves using the products advertised. Two points are worth noting with regard to imagery-related processes. First, images can be generated spontaneously in the course of comprehending information (Radvansky and Zacks 1991; Wyer 2004), and the content of the information people see can determine the number of image-based representations that are formed (Radvansky et al. 1997; Radvansky and Zacks 1991; Wyer, Adaval, and Colcombe 2002).

Second, the type of imagery in which consumers engage, and whether it involves picturing oneself in the scene, might have different consequences. For example, asking consumers to imagine a red Ferrari winding down a beach road can lead to a mental image of such a scene. However, asking consumers to imagine themselves in the red Ferrari (self-imagery) can lead to a subjectively different experience that places them in a different visuospatial location (presumably inside the car rather than outside). Such self-imagery can

produce a subjectively different experience that can have important consequences.

Consistent with this notion, past research in consumer imagery has identified that use of self-related versus other-related imagery is an important moderator of imagery processing effects (e.g., Bone and Ellen 1992; Dahl and Hoeffler 2004). Bone and Allen (1992), for example, found that participants who were asked to imagine themselves as the character in an advertisement generated more self-related images, and these images influenced their attitudes toward the product being advertised. Dahl and Hoeffler (2004) showed that for incremental new products (i.e., continuous product innovations), self-imagery led to higher evaluations than other-imagery because consumers were better able to produce mental images of themselves using the new product.

These considerations suggest that consumers who encounter advertising for a product or service might spontaneously form one or more image-based representations of the different aspects of it. Further, they might either imagine themselves in the mental images they generate (self-imagery) or form images from the perspective of an observer. The impact of the image-based representations that result from self-imagery might, as we noted earlier, depend on the goal that consumers have in mind when they engage in it. Although the effects we postulate are restricted to conditions in which people imagine themselves in the scene (self-imagery), we nonetheless provide a rationale for why these effects are more likely in this case than they are when people form general mental images that do not involve the self.

Goal-Driven Imagery Processing

As noted at the outset, a functional view of imagery suggests that people engage in mental imagery with a specific purpose in mind (Moulton and Kosslyn 2009). In consumption contexts, people are known to browse or search on the Internet (Schlosser 2003). Their goals when they encounter advertising could include daydreaming about the advertised product or service to imagine a different reality, communicating about a product experience to friends, and gathering information, among others (Rosenblatt 1965, 1978). These different goals can influence the types of representations they form. For instance, when people attempt to create a story of their consumption experience, the mental images they generate are typically of themselves in different consumption-related scenes that are then integrated into a temporally and thematically cohesive narrative-like representation. People with an information acquisition goal generate mental images as well (e.g., images of themselves trying out different features). However, these images do not necessarily need to be integrated into a narrative-like representation.

In the present context, suppose that consumers encounter information about a product (e.g., a vacuum cleaner). If they have the goal of seeking information, they might generate mental images of themselves using the different attributes (e.g., an image of oneself cleaning the home, an image of how easy it is to store, etc.) and might hold these image-based representations independently in memory as a cluster of individual features (Zhao, Hoeffler, and Dahl 2009). If, however, consumers imagine the entire experience of using such a product (i.e., try to form a story), they might link the different image-based representations together to form a narrative-like representation of the entire experience of using the product to clean the house, beginning with taking out the vacuum cleaner and ending with putting it away (Adaval and Wyer 1998; see Adaval, Isbell, and Wyer [2007] for evidence of this in the political advertising context).

Thus, consumers with these two self-imagery goals might both generate mental images. But their effects might depend on the goal that is active and the function that these images must serve in the service of that goal. If the consumers' objective is to form a story of the experience as a whole, the different images have to be integrated into a narrative or temporally related sequence of events (see Adaval et al. 2007; Wyer 2004; Wyer and Radvansky 1999). If, on the other hand, their objective is to seek information, these images might be held separately without any attempt to integrate them until they are required to do so, at which point they might assess the evaluative implications of each piece of information separately and combine these implications to form a judgment (Anderson 1971; Fishbein and Ajzen 1975).

Note that it is extremely difficult to show the underlying processes and the corresponding mental representational forms that might result when people have different self-imagery goals because both goals can yield favorable evaluations. In order to distinguish between the underlying processes that result from the two goals, we identified a variable (visual perspective) that could potentially have detrimental effects on judgments in one case but positive effects in the other case.

Visual Perspectives: A Diagnostic Tool

A mental image, like a picture, is necessarily formed from a particular perspective or point of view (Kosslyn 1988). When a mental image is formed on the basis of a photograph, its perspective is often determined by the camera angle from which the photograph is taken (Meyers-Levy and Peracchio 1992). For example, as noted earlier, a photograph of the front of the White House might make one adopt the visual perspective of a person looking at the building from outside. When mental images are elicited from verbal information, however, the visual perspective one adopts depends on linguistic factors (Black, Turner, and Bower 1979; Jiang and Wyer 2009). For example, the statement "George went into the bar" is likely to elicit an image from the perspective of someone outside the bar, whereas "George came into the bar" is more likely to elicit an image from the perspective of someone inside. Visual perspectives can vary in not only location (e.g., inside vs. outside) but also direction (e.g., front vs. back, north vs. south), elevation (up vs. down), and distance (far away vs. near).

The few studies that have been published on the effects of visual perspective have typically presented a single stimulus (Jiang and Wyer 2009; Meyers-Levy and Perrachio 1992; for a review, see Libby and Eibach [2011]). These studies provide initial evidence that visual perspectives can influence not only comprehension but also evaluations. Meyers-Levy and Perrachio (1992), for instance, showed that participants with low motivation evaluate a product (a bicycle) more favorably when they are shown a photograph of the product that is taken from the perspective of someone looking up at the product from below. Jiang and Wyer (2009), who looked at visual perspectives formed from sentences, found that individuals with a chronic disposition to form visual images had more extreme emotional reactions to a situation that was described from the perspective of someone in the situation (e.g., "the drunk came into the kitchen and threw up on the floor") than when it was described from the perspective of someone outside ("the drunk went into the kitchen and threw up on the floor"). However, the integration of images that are generated from multiple perspectives has not been previously examined. For example, the photographs contained in many advertisements portray a product or service from many different camera angles. Similarly, verbal descriptions of a product can elicit images from a perspective that differs from that of the pictures that accompany them. Moreover, television ads often show various scenes with cuts and edits. How do people integrate information that elicits images from multiple perspectives?

Although very little evidence bears directly on this issue, we do know that images from different perspectives are harder to comprehend. Black et al. (1979), for example, showed that individuals take more time to comprehend statements when they presumably elicit visual images from different perspectives (e.g., "Mary was reading in her room; John went in to talk to her") than when they elicit images from the same perspective ("Mary was reading in her room; John came in to talk to her"). This occurs because in the first case, the reader adopts the perspective of Mary and reading a subsequent statement, "John went in to talk to her," requires one to mentally shift one's visuospatial location from inside the room to outside the room. Such a shift is not required in the second instance, making the latter pair of sentences easier to comprehend. Thus, a shift in perspective leads to slower comprehension, suggesting that some sort of processing difficulty is undoubtedly encountered when people try to comprehend information that elicits images from different perspectives. We extend this idea to the current context in which multiple images involving the self might be generated.

We assumed that when people encounter print and television ads, they generate mental images from multiple perspectives. For example, an advertisement might show the exterior of a car as well as pictures of the instrument panel and the view of the road from the driver's seat. People who imagine themselves in the scene with the goal of forming a narrative of the experience as a whole might have to mentally shift the visuospatial perspective they have of themselves initially (that of standing outside the car looking in) to a different one (that of sitting in the car looking out), and then once they have done so, they have to mentally reorganize the different images to form a temporally ordered sequence of events (Wyer 2004) in order to construct an overall story of the experience. These tasks require processing effort and increase processing difficulty (Schwarz 2004; Shen, Jiang, and Adaval 2010; Winkielman and Cacioppo 2001). Consequently, they can have an adverse effect on subsequent judgments. This negative effect on judgments is more likely to occur if one is engaging in self-imagery and has placed oneself in the scene than if one is merely observing the scene as an external observer because the shift in visuospatial location is particularly more effortful in the former case than in the latter.

The detrimental effects on judgment are also unlikely to occur unless individuals are implicitly or explicitly motivated to construct a narrative representation of the temporal sequence of events described. If people's goal is simply to imagine themselves acquiring information about a product (e.g., imagining themselves interacting with or exploring different features), they might form separate mental images of each aspect of the product and hold these images independently in memory. That is, there is no need to mentally reorganize them to integrate these images into a story (Woike 1994). This should reduce the processing effort required. Further, the negative effects that one would generally expect from having to shift one's visuospatial perspective might be nullified by a more positive effect of seeing a different perspective that gives the impression of being more informative (i.e., ads showing different perspectives appear to provide more information). In addition, the self-imagery employed while interfacing with a product by exploring its features could be rewarding (Schlosser 2003) in its own right relative to conditions in which the imagery is not self-related.

In summary, we assumed that the pictures in an ad would elicit mental images from the perspective from which the pictures were taken. However, we expected the effects of these images on reactions to the ad to depend on how the images were used. When individuals were motivated to form a narrative representation of themselves experiencing the situations portrayed in the ad, we hypothesized that pictures that were taken from different perspectives would have a detrimental effect on product evaluations relative to conditions in which the pictures were taken from similar perspectives. However, when individuals imagined themselves acquiring information when they viewed the ad, we hypothesized the opposite to be the case. Thus, manipulating the visual perspectives of the images generated allowed us to determine how the effects of self-imagery on judgment can vary, depending on the goal that is active at the time imagery-based processes are being engaged in.

The first two experiments we conducted evaluated these hypotheses and circumscribed the conditions in which they are valid. The last two studies used memory and eye-track-

ing data to confirm the nature of the mental representations that underlie the effects we observed and the processes that govern their use.

EXPERIMENT 1: GOAL-DRIVEN IMAGERY AND VISUAL PERSPECTIVES

Participants received two ads for a resort hotel, each consisting of four pictures. In some conditions, the pictures in each ad were all taken from similar visual perspectives (depicting either the inside of the hotel or the outside). In other conditions, each ad contained two pictures of the inside of the hotel and two of the outside. We hypothesized that when participants were motivated to construct a coherent narrative-based representation of themselves experiencing or using different parts of the hotel, presenting pictures from different perspectives would have an adverse effect on their evaluations. When participants were motivated to acquire as much information about the hotel as possible, however, we expected that presenting pictures from different perspectives would have a positive effect on their evaluations.

We also examined the hypothesized constraint on the validity of these hypotheses. That is, the detrimental effects we assumed to occur under narrative goal conditions will be most likely to occur when individuals are motivated to construct a narrative representation of themselves engaging in the sequence of events described (i.e., self-imagery). In this case, they may find it difficult to imagine themselves moving abruptly from one situation to another quite different one without mentally "filling in" the experiences that permit the transition. If people imagine a situation from the perspective of an observer (general imagery) rather than the perspective of someone who is personally in the scene, they might maintain this outsider perspective throughout the experience and the perspective from which the individual events are described may have little effect on the representation or the difficulty of constructing it. By comparing conditions in which participants were likely to form self-referent images of the situation conveyed in the ads with conditions in which they were disposed to form more general images, we confirmed this contingency.

Method

Eight hundred and eight adult participants located in the United States ($M_{age} = 34.54$; 45% male) were recruited from an online panel (Mechanical Turk) to participate in this study for a small monetary payment. They were assigned randomly to one of 18 cells of a 3 (instruction: self-imagery vs. general imagery vs. control) × 3 (processing goal: story construction vs. information acquisition vs. no goal) × 2 (visual perspective: similar vs. different) between-subject design, giving us an average cell size of 45.

Stimulus Materials. Eight pictures of a beach hotel were used in this study to construct ads. Four pictures depicted the interior of the hotel (e.g., the lobby, the bedroom, the restaurant, and the gym). Four others showed the exterior of the resort (e.g., the building, the beach, the pool, and the garden). These pictures were used to construct four different ads, two for use in each perspective condition (see fig. 1). In *similar-perspective* conditions, one ad contained all four interior pictures and the other contained all four exterior pictures. In *different-perspective* conditions, each ad was composed of two interior pictures and two exterior ones. To control for the amount and type of information participants received, each participant saw two ads (i.e., both the ads for similar perspective or both the ads for different perspective) in a counterbalanced order. This ensured that in each perspective condition, each of the eight pictures appeared only once. Pooled over order, the amount and type of information participants received in each perspective condition remained the same.

To ensure that we had controlled for the attractiveness of the ads, 40 undergraduate students estimated the attractiveness of each ad along a scale from 1 (not at all) to 9 (very much). The mean rating of the ads used in each perspective condition did not differ ($M = 5.51$, 5.47, 5.36, and 5.62; all $F < 1$, NS).

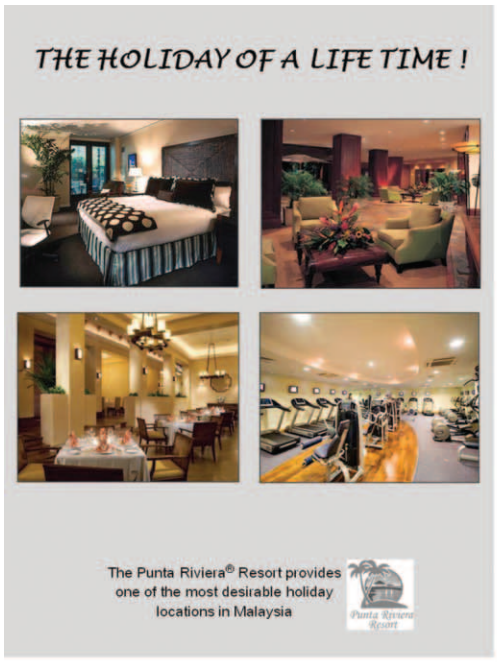
Procedure. All participants received preliminary instructions in order to manipulate the level and type of imagination that they would use in the later evaluation task. Participants in *self-imagery* conditions were told that this study was about their ability to form self-related mental pictures (e.g., "seeing" yourself driving a car in your mind) and that they should engage in self-imagery when working on a task that would be described shortly. Participants in *general-imagery* conditions were told that this was a study on mental imagery (e.g., "seeing" a car in your mind), and they should generate such mental images when working on the following task. In contrast, participants in *control* conditions were not given any specific instruction regarding imagery and were merely told that they should follow the instructions to be given shortly.

Following this preliminary instruction, participants were told that they would see two print advertisements of a vacation resort. However, participants in *story construction* conditions were told to "construct a story of your stay there [and] construct a story of what you will do there—a story that you can tell someone." Participants in *information acquisition* conditions were told to "assume that you are now collecting as much information as possible about the resort." Participants in *no-goal* conditions were simply told to look at each ad carefully and were given no indication that they would have to evaluate it.

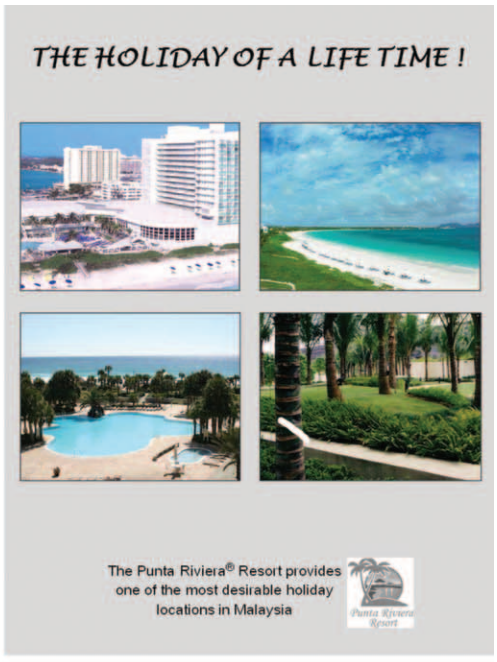
All participants were then shown two print ads described previously (see fig. 1) in a counterbalanced order. After participants had seen both ads, they indicated their liking for the resort and its attractiveness along scales from 1 (not at all) to 9 (very). Responses to the two items were correlated .75 and were averaged to form a single measure of participants' evaluation of the resort. After evaluating the resort, participants indicated the extent to which they (*a*) formed mental images and (*b*) formed self-related mental images along scales from 1 (not at all) to 9 (a lot).

FIGURE 1

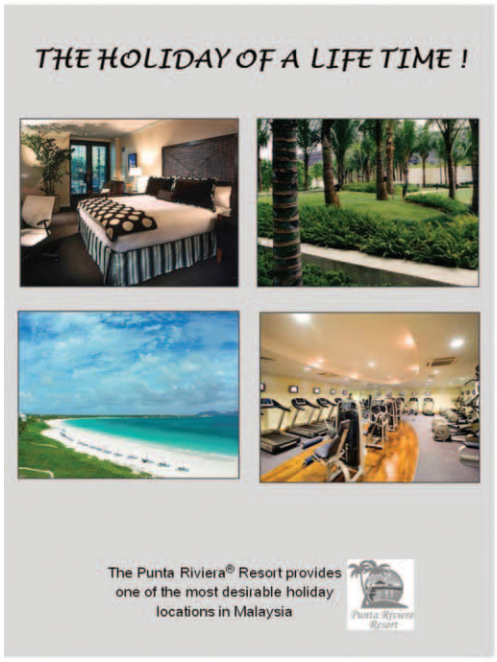
PRINT ADVERTISEMENTS PRESENTED IN SIMILAR-PERSPECTIVE AND DIFFERENT-PERSPECTIVE CONDITIONS OF EXPERIMENTS 1 AND 2



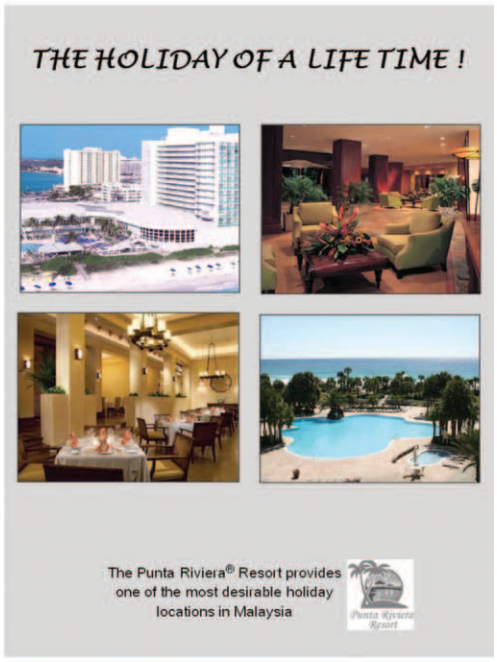
Similar-Perspective Ad 1



Similar-Perspective Ad 2



Different-Perspective Ad 1



Different-Perspective Ad 2

Results

Mental Imagery. Analyses of the extent to which participants formed mental images in general revealed only a significant main effect of instructions ($F(2, 790) = 24.31$, $p < .001$) that was not contingent on processing goals. Participants reported less mental imagery in control conditions ($M = 5.98$) than in either self-imagery conditions ($M = 7.07$; $F(1, 790) = 44.46$, $p < .001$) or general-imagery conditions ($M = 6.86$; $F(1, 790) = 31.21$, $p < .001$), with the latter two conditions not differing from each other ($F(1, 790) = 1.66$, $p > .19$). In contrast, analyses of self-imagery ratings yielded significant effects of imagery instructions ($F(2, 790) = 15.69$, $p < .001$). Specifically, participants reported more self-related mental imagery in self-imagery conditions ($M = 6.79$) than in general-imagery conditions ($M = 5.98$; $F(1, 790) = 19.08$, $p < .001$) and more imagery in the latter conditions than in control conditions ($M = 5.98$ vs. 5.65, respectively; $F(1, 790) = 3.27$, $p < .04$).

Resort Evaluations. Participants' evaluations of the resort are shown in table 1 as a function of instructions, processing goals, and perspective conditions. The effect of imagery instructions was significant ($F(2, 790) = 3.11$, $p < .05$) and indicated that participants evaluated the resort more favorably in self-imagery conditions ($M = 7.92$) than in control conditions ($M = 7.65$; $F(1, 790) = 6.92$, $p < .01$), with the general-imagery condition falling in the middle ($M = 7.79$). Further, consistent with prior evidence that imagery has positive effects on product evaluations (e.g., Bone and Allen 1992; Dahl et al. 1999; Escalas 2004, 2007), participants evaluated the resort more favorably when they generated imagery (i.e., pooling over the two imagery conditions) than when they did not ($F(1, 790) = 5.29$, $p < .03$).

More important, however, the three-way interaction of instructions, processing goals, and perspective conditions was marginally significant ($F(4, 790) = 2.23$, $p < .07$). The nature of this interaction is most easily conveyed in the last column of table 1, which shows the difference between evaluations when the ads shown were from different perspectives and evaluations when they were from similar perspectives. When participants were disposed to form self-referent images and had a story goal, ads that required a greater shift in perspective (different-perspective conditions) decreased their evaluations (from 8.22 to 7.60; $F(1, 790) = 5.97$, $p < .02$). When they had an information acquisition objective, however, ads showing pictures from different perspectives increased their evaluations (from 7.60 to 8.18; $F(1, 790) = 4.67$, $p < .04$). When participants did not have a particular goal in mind, their evaluations under the two perspective conditions did not differ (7.87 vs. 7.92, respectively; $F < 1$). Moreover, either when participants were disposed to form more general images or when no imagery was mentioned, visual perspective had no impact on evaluations regardless of their processing goal.

TABLE 1

RESORT EVALUATIONS AS A FUNCTION OF IMAGERY INSTRUCTIONS, PROCESSING GOALS, AND PERSPECTIVE CONDITIONS: EXPERIMENT 1

	Different perspectives (SD)	Similar perspectives (SD)	M_{diff}
Self-imagery:			
Story goal	7.60 (1.11)	8.22 (.82)	−.62
Information goal	8.18 (.81)	7.60 (1.23)	.58
No goal	7.87 (.87)	7.92 (.97)	−.05
General imagery:			
Story goal	7.76 (1.53)	7.71 (1.10)	.05
Information goal	7.96 (1.13)	7.93 (1.31)	.03
No goal	7.59 (1.00)	7.77 (1.12)	−.18
Control (no imagery):			
Story goal	7.59 (1.27)	7.57 (1.60)	.02
Information goal	7.60 (1.26)	7.75 (1.11)	−.15
No goal	7.63 (1.17)	7.67 (1.46)	−.04

Discussion

As we hypothesized, when participants had the goal of constructing a story of their personal experience at the hotel, presenting pictures from different visual perspectives decreased their evaluation of it. When participants' goal was to acquire information about the hotel, however, presenting pictures from different perspectives increased their evaluations. The latter participants apparently considered the information to be greater when the pictures in each ad were taken from different perspectives even though the actual amount of information conveyed, pooled over ads, was the same in both perspective conditions.

These effects, however, were restricted to conditions in which participants were disposed to form a representation of the hotel with reference to themselves. When participants were disposed to form more general images on the basis of the information without necessarily thinking of themselves or when the construction of visual images was not mentioned at all, perspectives had no impact on their evaluations regardless of their processing goal. Thus, imagining themselves in the situation being considered may be necessary for differences in perspective to have an impact.

EXPERIMENT 2: IMAGINATION DIFFICULTY AS A MEDIATOR

Experiment 1 supported our hypothesis that when participants try to form a single self-referent narrative-based representation of their experience at the hotel, the need to shift perspectives increased processing difficulty and consequently decreased their evaluations. When their goal was to acquire information, however, the individual aspects of the resort did not need to be integrated into a single representation. In this case, the pictures from different perspectives were likely to be perceived as more informative, leading to an increase in evaluations. Although these interpretations

are plausible, more direct evidence of the processes we assume to underlie the effects is necessary.

More specifically, we predicted that in the self-imagery, story construction conditions, the detrimental effects of multiple perspectives on judgment occurred because participants imagining themselves in the scene experienced more difficulty in imagining and integrating these perspectives into a coherent whole (i.e., a story with a narrative structure). However, if people's goal is simply to imagine themselves acquiring information about a product, multiple perspectives might be perceived as more informative and result in more favorable product evaluations. Given that information-seeking conditions do not require people to integrate the experience into a story-like structure, images generated from multiple perspectives should not have any detrimental effect and should, if anything, make the individual aspects of the product more vivid. Experiment 2 tested this possibility.

In addition, experiment 2 examined an additional aspect of our findings. Participants in no-goal conditions of experiment 1 were told simply to look at each ad without being given any objective. More generally, however, participants who encounter ads of the sort we presented might be disposed to evaluate the ads' referent spontaneously in the absence of any specific goals that require it (i.e., they might have an evaluation mind-set). In this case, they could employ either of the strategies that appeared to govern processing in other goal conditions of experiment 1. If participants with a general evaluation goal spontaneously imagine themselves in the resort and try to construct a coherent narrative of their experience, their evaluations should be more unfavorable when their construal of the pictures in the ads requires more shifts in perspective. If they spontaneously adopt an information acquisition goal, however, their evaluations should be more favorable in these conditions. We examined these alternative possibilities by giving participants in self-imagery conditions an evaluation goal in addition to the story construction and information acquisition goals examined earlier.

Method

Three hundred thirty-one Hong Kong undergraduate students participated for a small monetary payment. They were assigned randomly to one of six cells of a 2 (visual perspective: similar vs. different) × 3 (processing goal: evaluation vs. story construction vs. information acquisition) between-subject design, giving us an average cell size of 55 in this experiment.

All participants were asked to engage in self-imagery in this study. However, instructions about the goals they had while doing so varied. Participants in *evaluation* conditions were simply told to "close your eyes for a moment [and] imagine that you are currently in the hotel resort, and consider what evaluation you would give to it." Participants in *story construction* conditions were told to "close your eyes for a moment [and] imagine that you are telling a vivid story to your friend about your recent stay in this hotel." Participants in *information acquisition* conditions were told to "close your eyes for a moment [and] imagine that you are collecting information to assess the suitability of the resort for a trip next month."

Participants were then shown one of the four print ads described previously (see fig. 1). After receiving the instructions and viewing the ad, participants evaluated the resort along the same scales employed in experiment 1. Then they indicated the extent to which they felt that the ad was informative along a scale from 1 (not at all) to 9 (a lot) and reported how difficult it was to imagine themselves staying in the resort along a scale from 1 (not difficult at all) to 9 (very difficult).

Results

Note that showing only one ad to each participant varies not only the visual perspective but also the type of information he or she receives. So, for example, some people might be more influenced by the size of the swimming pool and others might be more influenced by the size of the bed. To keep the amount and type of information constant, data were pooled over people who received the two similar-perspective ads (see similar-perspective ad 1 and ad 2 in fig. 1) to create a single *similar-perspective* condition. Similarly, data were pooled over people who received the two different-perspective ads (different perspective ad 1 and ad 2 in fig. 1) to create a *different-perspective* condition, and the data pattern we report below does not depend on which ad they viewed within each perspective condition (all $p > .20$). Thus the informational content was kept constant across conditions, and differences in means cannot be attributed to what was communicated in each ad (i.e., content differences that result from exposing people to different pictures).

Imagination Difficulty and Perceived Informativeness. Participants' perceptions of the difficulty in imagining themselves in the hotel were analyzed as a function of perspective and processing goal conditions. Participants found it more difficult to imagine themselves in the resort in different-perspective conditions ($M = 4.36$) than in similar-perspective conditions ($M = 3.62$; $F(1, 325) = 11.83$, $p < .001$). At the same time, they considered the resort ad to be more informative in the former conditions ($M = 3.55$) than in the latter ($M = 2.97$; $F(1, 325) = 11.60$, $p < .001$). No effects involving processing goals were significant in either analysis.

Resort Evaluations. Analyses of participants' evaluations of the resort revealed an interaction of perspective shift and processing goals ($F(2, 325) = 8.27$, $p < .001$; see table 2). Participants with the goal of creating a story rated the resort less favorably when the ad information was conveyed from different perspectives than when it was not (5.64 vs. 6.26, respectively; $F(1, 325) = 3.98$, $p < .05$). Interestingly, a similar difference was evident in evaluation goal conditions (5.69 vs. 6.38, respectively; $F(1, 325) = 4.88$, $p < .03$). In information acquisition conditions, however, participants

TABLE 2

RESORT EVALUATIONS AND PROCESS MEASURES AS A FUNCTION OF PROCESSING GOALS AND PERSPECTIVE CONDITIONS: EXPERIMENT 2

	Different perspectives (SD)	Similar perspectives (SD)	M_{diff}
Resort evaluations:			
Story goal	5.64 (1.78)	6.26 (1.21)	−.62
Information goal	6.53 (1.45)	5.71 (1.77)	.82
Evaluation goal	5.69 (1.73)	6.38 (1.52)	−.69
Imagery difficulty:			
Story goal	4.54 (2.06)	3.64 (2.02)	.90
Information goal	4.10 (1.97)	3.56 (1.94)	.54
Evaluation goal	4.47 (1.89)	3.65 (2.01)	.82
Perceived informativeness:			
Story goal	3.50 (1.72)	2.94 (1.41)	.56
Information goal	3.56 (1.66)	2.97 (1.41)	.59
Evaluation goal	3.60 (1.68)	3.00 (1.44)	.60

evaluated the resort favorably when the information was conveyed from different perspectives than when it was not (6.53 vs. 5.71, respectively; $F(1, 325) = 8.10$, $p < .01$).

Mediation Analysis. We expected that the effect of a perspective shift on evaluations of the resort would be mediated by imagination difficulty in both evaluation and story construction conditions but would be mediated by perceptions of informativeness in information acquisition conditions. Bootstrapping (Preacher, Rucker, and Hayes 2007) confirmed these expectations. Analyses of product evaluations in which both imagination difficulty and informativeness were included as predictors indicated that in evaluation conditions with 5,000 bootstrapping samples, the mediating effect of imagination difficulty was significant (95% confidence interval [CI] = −.4316 to −.0305), but the effect of informativeness was not (95% CI = −.0007 to .1328). Analyses in story construction conditions yielded the same conclusion: for imagery difficulty, 95% CI = −.4272 to −.0290; for informativeness, 95% CI = −.0123 to .0779. In information acquisition conditions, however, the mediating effect of informativeness was significant (95% CI = .0168 to .2834), but the mediating effect of imagination difficulty was not (95% CI = −.0833 to .0295). Thus, imagery difficulty but not informativeness mediated the impact of perspective differences on resort evaluations in both evaluation and story construction conditions. However, perceived informativeness but not imagery difficulty mediated the impact of perspective differences in information acquisition conditions.

Discussion

Experiment 2 confirmed that the effect of perspective differences on participants' responses to information depends on their processing goals. When individuals were told to imagine that they were communicating a story of the resort experience to others, and thus had an implicit goal of constructing a narrative representation of the information, perspective differences decreased their evaluations. When individuals' objective was to acquire information, the effect of perspective differences was in the opposite direction.

The similar effects of perspective conditions in story construction and evaluation goal conditions suggest that consumers' disposition to construct a narrative representation of their experience with a product or service can occur spontaneously when they are motivated to evaluate it. Although this conclusion might be restricted to conditions in which the product information consists of pictures and might not necessarily generalize to conditions in which verbal information is processed, it is nonetheless provocative.

Interestingly, measures of imagination difficulty in this study yielded only a significant main effect of visual perspective. That is, different visual perspective images appeared to lead to greater imagination difficulty regardless of the goal people had. The absence of an interaction with goals could indicate that images from multiple perspectives can affect imagination difficulty in two ways. First, images from different perspectives might be difficult to imagine more generally because they require a shift in one's visuospatial perspective. Second, additional difficulty might arise from attempts to integrate this information in story goal conditions. The former is a more general effect while the latter is dependent on the processing goal. Participants are often unable to partition out the various sources of difficulty in much the same way that people cannot identify the source of their affect (Schwarz and Clore 1983). Consequently, retrospective measures of self-reported imagination difficulty might not be ideal to tease apart the source of this difficulty. In experiment 3, we used eye-tracking measures to get a clearer picture of the underlying integration process.

EXPERIMENT 3: EYE-TRACKING EVIDENCE FOR IMAGINATION DIFFICULTY

Experiment 3 provided process evidence in support of our conceptualization that different perspectives have a detrimental effect on judgments when participants engage in self-imagery with a goal to construct a story of the experience. If individuals with a story construction goal attempt to form a coherent representation of their experience in the situation and if the mental images generated from pictures are from different perspectives, they are likely to shift their attention back and forth repeatedly between pictures in an attempt to construct this narrative. If this is the case, it could account for the greater difficulty of processing that we assumed to occur in this condition. If participants' goal is to acquire information rather than to construct a coherent representation, however, this process is less likely to occur. Experiment 3 used eye-tracking data to examine this possibility.

Method

One hundred seventeen Hong Kong undergraduate students participated for extra course credit. They were assigned randomly to one of four cells of a 2 (visual perspective: similar vs. different) × 2 (processing goal: story construction vs. information acquisition) between-subject design. Only self-imagery conditions were run. Because of incomplete recording of eye movements and insufficient calibration, the data from nine participants were discarded, leaving 108 participants in the sample we evaluated, yielding average cell sizes of about 27.

Apparatus and Materials. Eye movements were recorded by a Tobii T60XL eye tracker with no head or chin gear. Eye positions were sampled at 60 hertz with spatial resolution of less than 0.5 degree of visual angle. Participants in the experiment were seated such that the distance between the monitor and their eyes was approximately 62 centimeters, and they had complete freedom of head movement.

Participants saw one of the four full-page (24.3 × 32.6 centimeters) color advertisements that we had used in experiment 2. In similar-perspective conditions, the ad contained either all four interior pictures or all four exterior pictures. In different-perspective conditions, the ad was composed of two interior pictures and two exterior pictures (see fig. 1). As in experiment 2, data were pooled over the two similar-perspective ads to create the similar-perspective condition and the two different-perspective ads to create the different-perspective condition.

Procedure. Participants were run individually. Upon arriving, they were told that they would be asked to finish several unrelated tasks on the computer and that a built-in camera on the computer monitor would record their behaviors to ensure that the quality of data collected was good. Therefore, they were told not to move around in the seat and to keep their eyes on the screen once the study began.

Participants were then told that they would take part in a study of imagery (i.e., the ability to form mental pictures). The experimenter then gave them a sample self-imagery task to ensure that they understood what was required of them. In story construction conditions, they were told to imagine that they were incoming freshmen and were trying to form an image of different aspects of the university (e.g., the atrium, the coffee shop, the lecture theaters, the soccer field, etc.) and the order in which they were likely to encounter them, so they could communicate their experience at the university to someone else. In information acquisition conditions, they were told to imagine that they were collecting information about the different aspects of the university and to form separate images of the different aspects of the university described above so that they could think about each aspect later.

After participants had completed these sample imagery exercises, they were given the specific imagery instructions for the main task. Participants were told, "We will show you some pictures of a resort that will soon open in a nearby area. We would like you to use the same strategy you used earlier. Please look at each picture carefully and imagine that you will be visiting the resort next month." Participants in story construction conditions were told, "Please . . . form an image of your experience in each part of the resort shown and try to construct a story of what you will do there—a story that you can tell someone. That is, try to imagine what you will do first, what you will do next, etc. and form a story of your experience there." In information acquisition conditions, they were told to imagine that they were "collecting as much information as possible about the resort. Try to keep the various aspects of the resort in mind by forming separate mental images for each piece of information you encounter."

Participants' seating position was adjusted and the eye-tracking device was calibrated by asking participants to focus on nine red calibration dots that were presented sequentially on different areas of the computer screen (for the mechanism behind the eye-tracking calibration, see Brisson et al. [2013]; for a review of eye-tracking research in marketing, see Wedel and Pieters [2006]). Participants were told that this calibration exercise was necessary to ensure that the quality of the video was good. Soon after the calibration, the instructions for the main task (described above) appeared on the screen and the resort ad was shown. They were allowed to examine the ad at their own pace and asked to press a designated key to go to the next page when they had finished reading. After viewing the ad, participants indicated their liking for the resort and perceived attractiveness of the resort along two scales that ranged from 1 (not like at all/not attractive at all) to 9 (like very much/very attractive). The two measures were correlated .68 and were averaged to form a single measure of participants' evaluation of the resort.

Scoring. The eye tracker recorded the time they spent on the ads and their eye movements. The eye movements could be categorized into areas of interest that were defined a priori. Six areas of interest were defined for each ad: four for the four pictures contained in the ad and two for verbal content (one for the headline and the second for the logo with text at the bottom). See figures 2 and 3 for an illustration. The amount of time the eye dwelt on each area (eye fixations) and the number of eye movements between each area (eye saccades) were also computed.

Participants' pattern of eye movements did not depend on which ad they viewed within each perspective condition (all $p > .10$) and merely provided a replication. Therefore, data were pooled over the two ads within each perspective condition to control for content differences in the analyses to follow.

Results

Resort Evaluations. Analyses of participants' evaluations of the resort revealed a significant interaction of goal and visual perspective ($F(1, 104) = 4.74$, $p < .04$; see table 3). Follow-up analyses showed that participants with a story

FIGURE 2

SAMPLE EYE-TRACKING MAP IN STORY CONSTRUCTION CONDITION OF EXPERIMENT 3

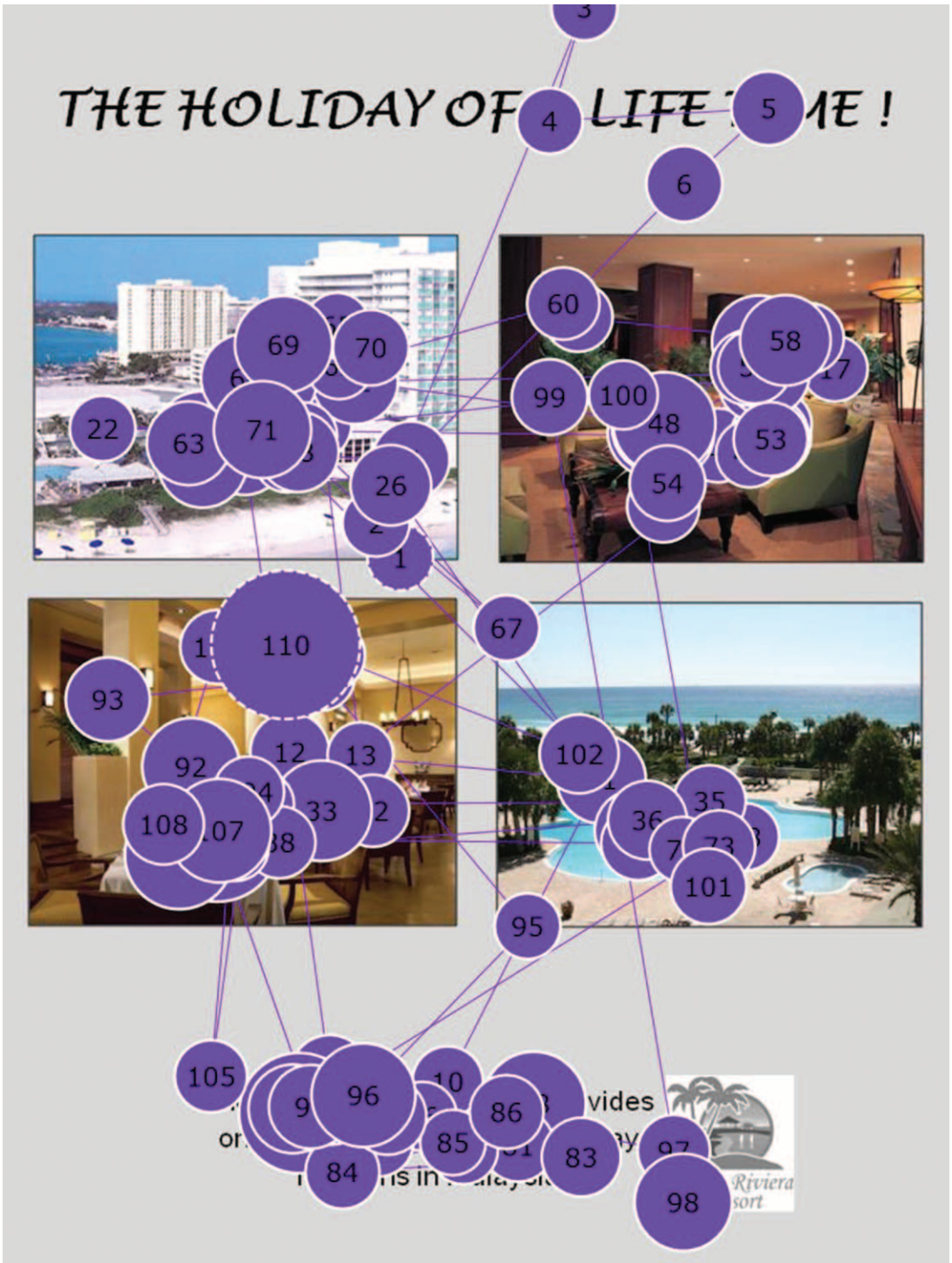


FIGURE 3

SAMPLE EYE-TRACKING MAP IN INFORMATION ACQUISITION CONDITION OF EXPERIMENT 3

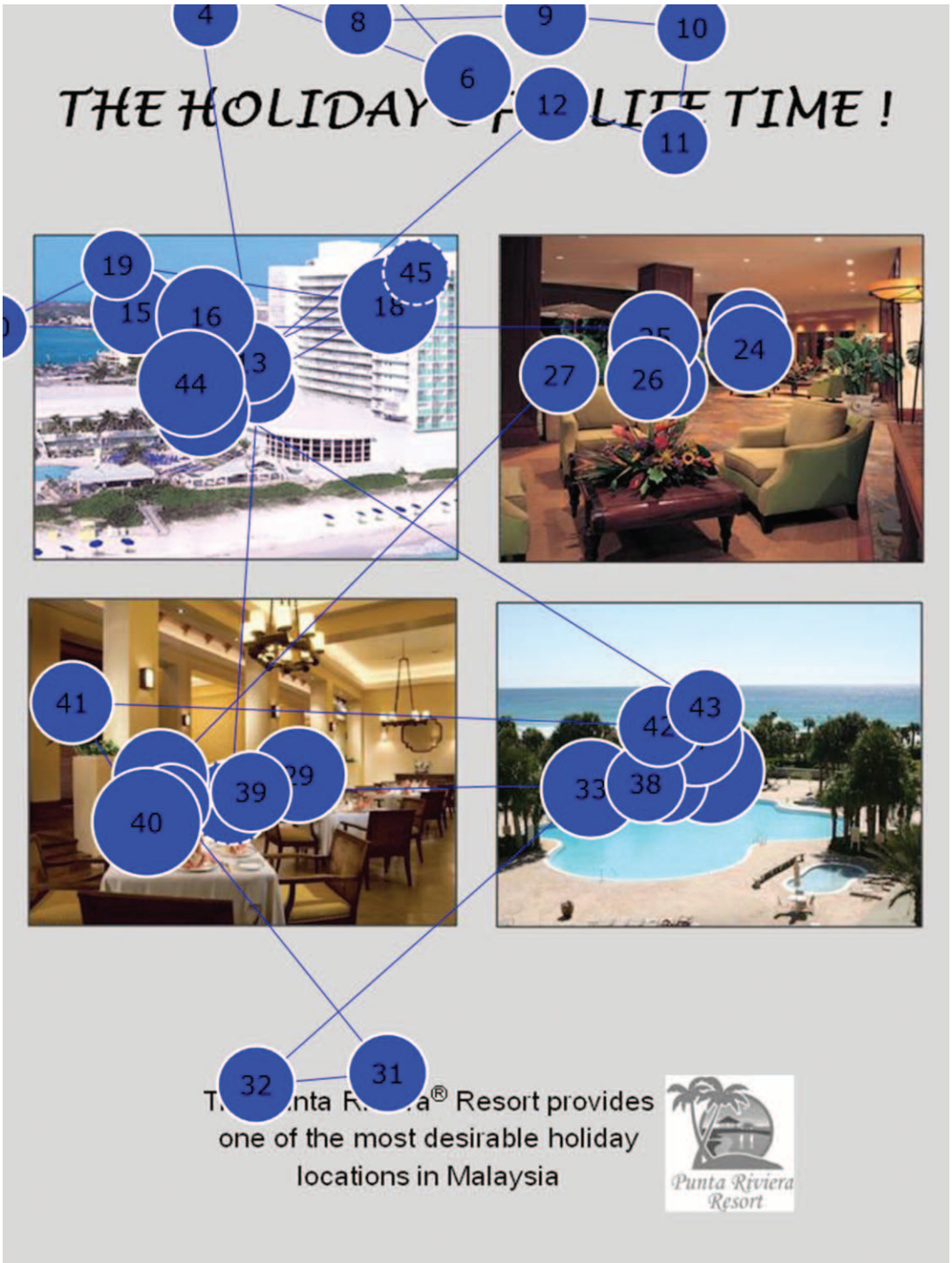


TABLE 3

RESORT EVALUATIONS AND EYE-TRACKING BEHAVIOR AS A FUNCTION OF PROCESSING GOALS AND PERSPECTIVE CONDITIONS: EXPERIMENT 3

	Different perspectives (SD)	Similar perspectives (SD)	M_{diff}
Resort evaluations:			
Story goal	6.42 (1.04)	7.00 (.89)	−.58
Information goal	6.76 (1.25)	6.45 (1.05)	.31
Duration of ad watching (in seconds):			
Story goal	27.37 (14.94)	19.52 (8.32)	7.85
Information goal	18.94 (10.57)	19.15 (11.23)	−.21
No. of eye fixations:			
Story goal	93.88 (48.81)	65.93 (27.98)	27.95
Information goal	68.07 (35.69)	68.21 (37.38)	−.14
No. of interperspective eye saccades:			
Story goal	16.68 (10.15)	0 (0)	16.68
Information goal	11.04 (7.21)	0 (0)	11.04
No. of intraperspective eye saccades:			
Story goal	5.20 (3.94)	15.79 (5.88)	−10.59
Information goal	4.26 (4.60)	14.43 (13.52)	−10.17

construction goal rated the resort less favorably when the ad information was conveyed from different perspectives than when it was not (6.42 vs. 7.00, respectively; $F(1, 104) = 4.23$, $p < .05$). Participants with an information acquisition goal rated the resort relatively more favorably in the former condition than in the latter (6.76 vs. 6.45, respectively). Although the difference was not significant ($F(1, 104) = 1.18$, $p > .27$), it was consistent in direction with previous studies.

Duration and Eye Fixations. Participants spent an average of 21.1 seconds reading the ad. Analyses of participants' ad reading time revealed a marginally significant interaction of goal and visual perspective ($F(1, 104) = 3.23$, $p < .07$). Planned contrasts further showed that participants with a story construction goal spent more time reading the ad when the pictures were from different perspectives ($M = 27.37$) than when they were not ($M = 19.52$; $F(1, 104) = 6.25$, $p < .02$). In contrast, participants with an information acquisition goal spent a similar length of time reading the ad in both perspective conditions (18.94 vs. 19.15, respectively; $F < 1$).

Similarly, analyses of participants' total number of eye fixations also revealed a marginally significant interaction of goal and perspective shift ($F(1, 104) = 3.71$, $p < .06$). Planned contrasts further showed that participants with a story construction goal had more eye fixations on the ad when the pictures in the ad were taken from different perspectives ($M = 93.88$) than when they were not ($M = 65.93$; $F(1, 104) = 7.19$, $p < .01$). When participants had an information acquisition goal, however, their fixations were of equal amount in both perspective conditions ($M = 68.07$ vs. 68.21, respectively; $F < 1$).

Eye Saccades. Saccades are the jumps of the eye from one area of interest to another (see figs. 2 and 3). We mainly focused on two specific categories of saccades: interperspective and intraperspective. Interperspective saccades are eye movements between pictures having different visual perspectives. Intraperspective saccades are saccades between pictures having similar visual perspectives. Our predictions pertained primarily to the interperspective saccades under different goal conditions.

Analyses of the total number of interperspective saccades revealed a significant interaction effect of goal and visual perspective ($F(1, 104) = 5.83$, $p < .02$). More specifically, when participants viewed an ad containing pictures from different perspectives, they made more interperspective saccades when they had a story construction goal ($M = 16.68$) than when they had an information acquisition goal ($M = 11.04$; $F(1, 104) = 11.23$, $p < .01$). (When the pictures in the ad were taken from similar perspectives, there are no interperspective saccades by definition.)

Analyses of the number of intraperspective saccades that were also examined revealed only a significant main effect of visual perspective. That is, participants showed more intraperspective saccades for similar-perspective ads ($M = 15.11$) than for different-perspective ads ($M = 4.71$; $F(1, 104) = 44.44$, $p < .001$), and this was not contingent on their processing goal ($p > .10$).

Discussion

The results of experiment 3 provide an indication of why evaluations in experiment 2 were affected adversely under story goal conditions. First, participants engaging in self-imagery paid proportionately more attention to the ad (as evidenced by reading time) when they encountered different-perspective pictures and had a story goal than when their goal was to acquire information. Second, participants with a story construction goal were more likely to jump back and forth between pictures that were taken from different perspectives (see figs. 2 and 3), suggesting a greater attempt to integrate them into the story they planned to tell. This provides converging evidence for the fact that they experienced difficulty imagining themselves in the scene in these conditions and had to jump back and forth to create a story of their experience.

EXPERIMENT 4: EVIDENCE FOR UNDERLYING REPRESENTATIONAL FORMS

To reiterate, the first two experiments provide evidence that when consumers engage in self-imagery with the goal of forming a story, they form an overall narrative image-based representation of the sequence. Pictures of the events from very different visual perspectives increase the difficulty of constructing this representation and have a detrimental effect on their evaluation of the product or service being described. In contrast, an information-seeking goal does not

require them to form an overall representation, and information about individual events or features can be held independently in memory as separate representations. Our assumptions concerning the nature of these representations require more direct confirmation. Experiment 4 provided evidence of the structure of the representation formed in these conditions.

The assumption that individuals' mental representations vary when they encounter different information is supported by extensive work in cognitive psychology (see Radvansky et al. 1997; Radvansky and Zacks 1991; for reviews, see Wyer [2004]; Wyer and Radvansky [1999]; Zwaan and Radvansky [1998]). On the basis of this work, we assumed that individuals with a story construction goal construct an image-based narrative representation of the sequence of events they experience. In this representation, the visual frames they have been exposed to are cognitively linked. Adaval et al. (2007) obtained evidence of these links when individuals form narrative representations on the basis of verbal information. To obtain support for similar organization of information in the present situation, we used analogous procedures.

We assumed that if people with a story construction goal create a narrative of the experience described by information of the sort we presented, they would attempt to encode the information into a single representation (e.g., an episode model) of the form proposed by Wyer and Radvansky (1999). If this is so, extracting one frame of the sequence should typically facilitate the retrieval of other frames that immediately precede or follow it. Any factor that makes it difficult to form a narrative (e.g., pictures from a different perspective) would presumably hurt the formation of a narrative-like representation and affect memory for specific pictures. To determine if this was the case, we looked at memory for a picture that was preceded by a picture from a similar perspective versus a different one under different goal conditions. We expected that in story goal conditions, we would observe memory decrements when a picture is preceded by an image from a different perspective than when it is preceded by an image from a similar perspective.

If participants have an information acquisition goal, however, the event described by each picture might be stored separately in memory, and the likelihood of retrieving any picture should be independent of the retrieval of other pictured events. That is, the information about one image is not connected to another (as in a narrative representation), and therefore, retrieving one image should not have any facilitative effect on the retrieval of other images. However, to the extent that pictures from different perspectives are indicative of greater information being presented, a shift in visual perspective at the time people encounter information might lead to greater alertness in encoding the information. Thus, it is possible that memory for specific pictures might actually be better if they are preceded by pictures from different perspectives than when they are preceded by similar perspectives.

To investigate these effects, we constructed two television-like ads, each comprising a sequence of pictures of both the inside and outside of a resort. Target pictures were embedded in these sequences in a way that allowed us to test whether memory for the targets would be facilitated if they were preceded by an image from a similar perspective or a different perspective and whether this would depend on the processing goal that participants had. We also determined if the frequency of perspective shifts in an ad has an impact. Although one might expect a large number of shifts to be particularly detrimental, only a few such shifts might be sufficient to produce the decrement in memory as suggested by research on scene recognition (Christou and Bulthoff 1999; Diwadkar and McNamara 1997; Motes, Finlay, and Kozhevnikov 2006; Simons and Wang 1998; Wang and Simons 1999). As will be seen, this was true in the present study as well.

Method

One hundred forty-six Hong Kong undergraduate students participated for a small monetary payment. All participants were asked to engage in self-imagery. They were randomly assigned to cells of a 2 (processing goal: story construction vs. information acquisition) × 2 (frequency of perspective shift: high frequency vs. low frequency) design. Visual perspective (similar vs. no different) was a within-subject factor in this experiment. The average cell size in this study was 37.

Stimulus Materials. Twelve pictures of the inside of a resort (i1–i12) and 12 pictures of the outside of a resort (o1–o12) were used to construct stimulus materials. The same 24 pictures were presented in both high-frequency shift and low-frequency shift conditions. In *low-frequency shift* conditions, two sets of six inside pictures (i1–i6 and i7–i12) and two sets of six outside pictures (o1–o6 and o7–o12) were combined to form eight different stimulus orderings in which inside sets and outside sets alternated (e.g., o1–o6, i1–i6, o7–ol2, i7–i12) but the particular sets that followed one another varied. In the above sequence, for example, five target items (o2, o6, i2, i6, and i8) were always preceded by a picture from a similar perspective. Three other target pictures in each set (i1, o7, and i7 in the preceding example) were preceded by a picture from a different perspective. These two sets of target items were used to evaluate the effects of perspective shift. Pooled over the eight orderings, the eight different target pictures were presented three times each. Memory for only these items was evaluated.

In *high-frequency shift* conditions, we constructed four different presentation sequences from the 24 pictures. In these sequences, pairs of inside pictures alternated with pairs of outside pictures in rapid succession (e.g., o3, o4, i5, i6, o1, o2, . . .) so that there were a larger number of shifts. However, each sequence was constructed so that the target pictures in high-frequency shift conditions were the same and were also preceded by the same pictures in these se-

quences that were in the sequences employed in low-frequency shift conditions.

Thus, three perspective shifts occurred in low-frequency conditions and eight shifts occurred in high-frequency conditions. Pooled over presentation sequences, however, each target item was presented the same proportion of times in both conditions.

All participants were asked to watch a timed PowerPoint presentation containing a series of pictures about a resort that would soon be open in a nearby location. They were told that each picture would stay on the screen for only a limited time. Participants in story construction conditions were asked to look at each picture and imagine themselves visiting the resort next month and to think of how they would tell a friend about what they would do there. Participants in information acquisition conditions were asked to look at each picture and imagine themselves acquiring information to assess the suitability of the resort for a trip next month. After these instructions, they viewed a sequence of pictures that contained either a large or a small number of shifts in perspective.

After seeing the pictures, participants were told that the purpose of the study was to determine how much of the information they could remember. They were told that they would be presented with pictures of resorts, some of which they had seen before and others which were new. They were told to indicate in each case if they had seen the item before by pressing a designated key on the keyboard. With this preamble, they were given a recognition sequence consisting of the 24 pictures they had seen and 16 they had not seen. The items were presented in four counterbalanced orders in such a way that pooled over orders the mean serial position of each target item was the same.

Results and Discussion

We assumed that having to shift between different visual perspectives would decrease participants' memory for items when they had a story construction goal but would facilitate their memory for items when their goal was to acquire information. This expectation was confirmed. For each participant, we determined the proportion of correct responses to (*a*) target pictures that had been preceded by a picture from a similar perspective and (*b*) target pictures that had been preceded by a picture from a different perspective. These proportions were then analyzed as a function of processing goal, shift frequency, and visual perspective, with visual perspective serving as a within-subject factor.

The interaction of visual perspective and processing goal was significant ($F(1, 142) = 8.33$, $p < .01$) and indicated that participants with a story construction goal were less likely to recognize a target picture if the picture that preceded it had been taken from a different perspective ($M = .84$, SD $= .13$) than if it had been taken from a similar perspective ($M = .86$, SD $= .10$; $F(1, 142) = 3.63$, $p < .06$). However, participants with an information acquisition goal were more likely to recognize a target picture in the first case ($M = .87$, SD $= .11$) than in the second ($M = .84$, SD $= .12$; $F(1, 142) = 4.50$, $p < .04$). These effects, however, did not significantly depend on the frequency of these perspective shifts in the presentation sequence. Apparently the difficulty of integrating the images formed from different perspectives reaches asymptote when only a few shifts are required and does not appreciably increase as the shifts become more numerous.

In summary, the results of experiment 4 provide additional evidence of the different mental representations that participants form under story construction and information acquisition goal conditions and the effects of these differences on memory for the information they receive. That is, participants with a story construction goal attempt to construct a single narrative-based representation of the sequence of experiences they imagine. Pictures that are taken from different perspectives make it difficult to construct such a narrative. Consequently, memory for target items is not facilitated when they are reminded using items that precede these targets. When participants have an information acquisition goal, however, providing pictures taken from different perspectives might give the impression of being informative (experiment 2). Thus, they might be attended to more and remembered better than when the pictures are from a similar perspective and thus are perceived as less informative.

GENERAL DISCUSSION

The influence of imagery in information processing has been extensively investigated in both psychology (e.g., Jiang and Wyer 2009; Knäuper et al. 2009; Kosslyn 1976; Vasquez and Buehler 2007; Wyer and Radvansky 1999) and marketing (e.g., MacInnis and Price 1987; Petrova and Cialdini 2005; Wyer, Hung, and Jiang 2008; Wyer, Jiang, and Hung 2008). An important distinction has recently been made about the role of the self in imagery (Dahl and Hoeffler 2004). We add to this body of work by taking a functional view of imagery. That is, we posit that people engage in imagery usually in the pursuit of some goal (Moulton and Kosslyn 2009). Thus, people might engage in self-imagery to construct a story of an experience or to acquire information by imagining themselves interacting with a product or service. The effects of these goals on the consequences of self-imagery have not been previously identified. The current article used one characteristic of imagery, namely, the visual perspective from which mental images are formed, to highlight how the goals of self-imagery might lead to different outcomes. The results of four experiments converge on the conclusion that when individuals are disposed to construct an image-based narrative representation of the events that surround the use of a target product or service, differences in the visual perspective from which pictures of the target are taken make it difficult to construct this representation and, consequently, have a negative impact on evaluations of the product being described. In contrast, when individuals are simply motivated to acquire information about the target, pictures from different perspectives, which provide more information, increase their evaluations of it.

These effects of perspective were evident when participants were told to construct a story of the consumption experience that they could communicate to others and attempted to integrate the individual aspects of the experience into a temporally related narrative (e.g., an episode model; see Wyer and Radvansky 1999; Zwaan, Langston, and Graesser 1995). However, they occurred only when participants were told to imagine themselves in the presented information (i.e., self-imagery conditions in experiment 1). This is consistent with previous work by Dahl and Hoeffler (2004) that shows that self-imagery and general imagery can have different results.

Self-report data confirmed our assumption that individuals found it more difficult to imagine the experience when shifts in visual perspective were required in order to do so and that this difficulty mediated their evaluations (experiment 2). Evidence of the processes assumed by our conceptualization was obtained in experiments 3 and 4. That is, eye-tracking data obtained in experiment 3 indicated that individuals who attempt to construct an image-based narrative representation of the information shift their attention more frequently across pictures from different perspectives in order to integrate them. Experiment 4 showed that because of the difficulty of performing this integration, individuals with this objective are less able to remember the pictures. Considered in their totality, therefore, our findings provide strong support for our conceptualization and the assumptions on which it is based.

Although pictures from different perspectives that require a perspective shift have a detrimental effect when individuals attempt to integrate them into a coherent narrative, they can have positive effects when they process the information with other goals in mind. In particular, consumers who use imagery-based processing to acquire information about a product (e.g., imagine that they are interacting with different product features to see what the product can do) might not attempt to integrate the implications of the images they form. In this case, the images they construct appear to convey more information when they are formed from different perspectives, and so they evaluate the product more favorably than they would otherwise. The different factors that mediate evaluations in these conditions were confirmed by the mediation analyses performed in experiment 2. We speculated that the imagination difficulty that participants experienced when they encountered images from different perspectives had both (*a*) a more general effect that is encountered because such images require one to shift visual perspective and (*b*) a more specific effect that is related to the integration strategies dictated by different processing goals. In story conditions, when participants had to integrate these different images into a coherent whole, the difficulty they had in doing so became more apparent and affected their evaluations. However, in information-seeking goal conditions where there was no need to integrate the images into a story-like sequence, this difficulty was not apparent and in some instances appeared to boost evaluations. This was confirmed through the eye-tracking data in experiment 3.

The general implications of our findings should be noted. As we have noted previously, the present research is among the first to investigate the manner in which pictures of a stimulus are processed in the absence of the verbal descriptions that accompany them. However, to the extent that individuals spontaneously form visual images on the basis of verbal event descriptions, our findings may have implications for verbal information processing as well and consequently on the processing of narrative text. Our work thus adds to the growing literature on narrative imagery in cognitive psychology. According to Mar (2004), the neuropsychology of a narrative can be broken down into comprehension and production. At the comprehension stage, the presented information is typically represented in the form of mental models (Johnson-Laird 1983), which can refer to a situation (van Dijk and Kintsch 1983), an event, or a sequence of events (Radvansky et al. 1997; Zwaan et al. 1995). These event models are constructed spontaneously in the course of comprehension and have visual components (Wyer and Radvansky 1999). To create a larger self-referent episode model of the entire experience, it is necessary to detect what information is likely to fit; that is, some degree of elaboration is necessary to make the disparate elements hang together (Zwaan 2004). Our results suggest that when event models are formed from different perspectives, a larger episode model connecting them may be difficult to construct.

Our research also contributes to work on scene recognition (Christou and Bulthoff 1999; Diwadkar and McNamara 1997; Motes et al. 2006; Simons and Wang 1998; Wang and Simons 1999). This research suggests that when the orientation of a scene changes (because of either a change in the position of the viewer or a rotation of the objects in the scene), memory for the scene is decreased. These findings suggest that multiple perspectives of the same scene might have a detrimental effect on memory. Although these results are suggestive of memory decrements that occur because of shifts in perspective, they do not speak directly to the effects caused by processing goals and images formed from different scenes.

Practical implications of our findings are worth noting. Marketers often assume that providing descriptions of a product from multiple visual perspectives conveys more information to consumers, and this has a positive effect on consumers' evaluations. Our results suggest that this is not always the case. When consumers imagine themselves in a story of the overall experience, images from different perspectives can have a detrimental effect on consumers' product evaluations. This is particularly likely when consumers have an objective of communicating about the product to others or are trying to immerse themselves in an experience and creating a story. Our results also underscore the need to be careful about the distinction between self-imagery and general imagery as the former is where we noted most of the detrimental effects. Finally, the decrements in memory observed under story goal conditions suggest that when consumers are asked to imagine themselves in a scene, it might be beneficial to avoid using images from different perspec-

tives that could disrupt the formation of such a narrative. If these images are presented, the chances are that consumers' memory for the information is likely to be impaired.

DATA COLLECTION INFORMATION

Data for experiment 1 were collected online via Mechanical Turk in fall 2013 by the first author. Data for experiments 2–4 were collected by research assistants at Hong Kong University of Science and Technology in spring 2011, spring 2012, and fall 2013, respectively, under the supervision of the second author. The first author analyzed the data for experiments 1–3. The second author analyzed the data for experiment 4.

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