MIN ZHAO, STEVE HOEFFLER, and DARREN W. DAHL*

In this research, the authors examine the impact of imagination-focused visualization on the evaluation of really new products (RNPs)—that is, products that provide novel benefits but involve high learning costs. They compare imagination-focused visualization with memory-focused visualization and demonstrate that an imaginative focus leads to higher evaluations of an RNP but has no effect on the evaluation of incrementally new products, which involve continuous innovations that are easier to understand. They find that the underlying mechanism for this effect is imagination's impact on the perceived value of new benefits rather than on the learning costs. Furthermore, they show that the advantage of an imaginative focus is not simply due to the increased focus on product benefits, because imagination still leads to higher product evaluation than memory-focused visualization, even if participants in both conditions are asked to think about product benefits exclusively. Finally, an explicit focus on learning costs while using an imaginative approach draws attention away from product benefits and attenuates the advantage of imagination on product evaluation.

Keywords: new product adoption, visualization, imagination, mental simulation

The Role of Imagination-Focused Visualization on New Product Evaluation

The Tablet PC was introduced to the market as a versatile computer equipped with a sensitive screen designed to interact with a complementary pen. At introduction, the pen and touch-sensitive screen offered consumers novel computing experiences with direct screen input and touch-sensitive command modes. Such innovations, which represent technological groundbreaking departures from traditional categories, are often defined as really new products (RNPs) that enable consumers to do things they have never been able to do before (Dahl and Hoeffler 2004; Hoeffler 2003; Lehmann 1994; Moreau, Lehmann, and Markman 2001). However, as with the Tablet PC, which provided novel benefits, such as greater versatility and mobility, consumers tend to be slow to adopt new products (Gourville 2006). Gourville (2006) partly attributes the slowness of acceptance of RNPs to the learning cost associated with new product adoption and consumers’ underestimation of the value of new benefits.

To help consumers learn about the new benefits associated with RNPs, mental simulation of product usage has been identified as an effective cognitive tool (Dahl, Chattopadhyay, and Gorn 1999; Dahl and Hoeffler 2004; Hoeffler 2003). However, consumers are often reluctant to engage in the extensive cognitive thinking that might be required for effective simulation and instead rely on known, existing usage scenarios. In the creativity literature, Ward (1994) points to two reasons consumers might rely on a known usage scenario when faced with a new product problem (which is dubbed selecting the “path of least resistance”). First, selecting a known usage scenario reduces uncertainty. Second, relying on known, existing usage images is less cognitively taxing than imaginative thought.

Consequently, in the new product domain, when consumers are asked to simulate new product–related activities visually, they tend to underestimate the usefulness of radically new features (Dahl and Hoeffler 2004). Consumers base their mental images on their memories of existing consumption routines, which are more easily accessible. Yet focusing on existing consumption patterns may underestimate...
the perceived value of the novel benefits provided by an RNP and highlight negative learning-cost inferences associated with adopting an RNP. As a result, overall evaluations of an RNP may be discounted (Dahl and Hoeffler 2004). If typical consumer visualization strategies are anchored by a reference to existing activities and truncated to preserve cognitive resources, perhaps refocusing and motivating visual simulation in an imaginative way could increase the perceived value of the product benefits, potentially reduce the learning-cost considerations, and lead to enhanced evaluations. In our research, we incorporate visual mental imagery with an imaginative focus into new product learning and examine the impact of the imaginative focus on the evaluation of new products.

In Experiment 1, we compare the impact of memory-focused visualization with that of imagination-focused visualization and demonstrate that when people are encouraged to use imagination-focused visualization, they increase their evaluation of an RNP. In Experiment 2, we replicate our initial findings and identify the underlying process by which such visualization affects evaluation. We find that it is imagination’s impact on the perceived value of new benefits rather than on the learning costs that drives increases in consumer evaluations for RNPs. In both of these experiments, we demonstrate that an imaginative focus has little impact on the evaluation of incrementally new products (INPs)—that is, products that involve more continuous innovations with little learning costs. In Experiment 3, we manipulate the process we identified previously by asking people in both the memory and the imagination conditions to focus on either product benefits or learning costs. We find that even if people are prompted to visualize explicitly the benefits of an RNP, memory-focused visualization does not result in the same level of enhanced evaluation as imagination-focused visualization.

**VISUALIZATION AND EVALUATION OF RNPS**

As we mentioned previously, RNPs enable consumers to do things they have never been able to do before. As such, various methods have been proposed to help consumers learn about the new benefits associated with RNPs. Research has proposed that providing relational analogies with existing products could effectively help consumers learn (Gregan-Paxton and John 1997; Gregan-Paxton and Moreau 2003). In particular, Moreau and colleagues (Moreau, Lehmann, and Markman 2001; Moreau, Markman, and Lehmann 2001) show how analogies can be used to enhance consumers’ comprehension and acceptance of new products. Yet, as Roehm and Sterntahl (2001) note, the lack of common attributes between RNPs and existing products makes it challenging to find appropriate products to use when providing analogies to consumers. Another method that has been employed to help consumers learn about the new benefits of RNPs is visualization of product usage.

Visualization is a form of cognitive processing in which visual information is represented in working memory (MacInnis and Price 1987). Visualization enables the generation, interpretation, and manipulation of information through spatial representation. Visualization has been examined in several marketing contexts, including advertising effectiveness (Edell and Staelin 1983), preference formation (Phillips, Olson, and Baumgartner 1995), attitude development (Kiselman and Sternthal 1984), anticipatory satisfaction with an experience (MacInnis and Price 1990; Shiv and Huber 2000), and creativity in product design (Dahl, Chattopadhyay, and Gorn 1999). As Walker and Olson (1997, p. 159) state, when consumers make product decisions, they often form “visual images of certain product-related behaviors and their consequences.”

Although in general visualization helps consumers evaluate products (e.g., Phillips 1996; Shiv and Huber 2000), within the domain of RNPs, the impact of visualization is varied. Prior work on measuring preferences for RNPs has demonstrated the positive role of visualization by showing that visualizing using an RNP leads to more stable preferences (Hoeffler 2003). However, other research has also shown that visualization can be negative for RNPs because it can lead to lower overall evaluations and lower adoption intentions (Dahl and Hoeffler 2004). Why would visualization have a negative effect on the evaluation of RNPs?

Human beings are cognitive misers who naturally conserve their limited information-processing resources. They use the most easily accessible or available information for decisions, take shortcuts whenever they can, and often rely on the path of least resistance (Bettman, Luce, and Payne 1998; Feldman and Lynch 1988; Fiske and Taylor 1991; Ward 1994). As a consequence of these cognitive-processing characteristics, errors and biases occur. Consistently, in the new product domain, when consumers are asked to think about the benefits or drawbacks of RNPs (Hoeffler 2003) or to “picture themselves making use of the product” (Dahl and Hoeffler 2004, p. 263), they take the easiest approach and limit their mental imagery to the most readily accessible consumption situations and experiences—namely, the typical consumption scenario of existing products in their memory. This focus is likely to have a negative impact on the perceived value of an RNP’s benefits because visual simulation based on memory will not capture the new possibilities inherent in the RNP. Furthermore, focusing on prior usage might save initial cognitive effort, but it could also highlight the behavioral change required to fit the RNP into prior product usage patterns and thus increase consumers’ inferences associated with potential learning costs (Mukherjee and Hoyer 2001). These outcomes ultimately lead to lower overall evaluations of an RNP.

Although visualization based on past consumption patterns decreases the evaluation of RNPs, we propose that refocusing visualization with an imaginative emphasis might highlight the perceived value of product benefits, attenuate the focus on learning cost, and increase new product evaluations. Visualizing with an imaginative emphasis enhances the focus on the new, never-before-experienced uses of a product that may otherwise not be fully appreciated. Prior work has examined visual mental imagery in the product design process by explicitly comparing the effect of spontaneous or memory-focused visualization with that of imagination-focused visualization, and it has found advantages for the imagination-based approach (Dahl, Chattopadhyay, and Gorn 1999). Specifically, Dahl, Chattopadhyay, and Gorn (1999) show that imagination-focused visual imagery leads to more useful and original new product designs (when designers also incorporated the customer
into their visualization exercise) than visual imagery with a memory focus or spontaneous visualization (which elicits memory-focused images), because memory-focused visualization fixes designers on previous ideas and applications (Jansson and Smith 1991). In addition, the notion of creative cognition suggests that when a person moves away from a default routine and employs divergent thinking, creativity will be enhanced (Finke, Ward, and Smith 1992; Moreau and Dahl 2005). These findings suggest that in a new product adoption context, changing consumers’ focus toward imaginative visualization may also produce positive benefits. We expect that imaginatively visualizing the usages of the new product will better illuminate the value of its benefits by reducing memory fixation and by better highlighting the new opportunities and importance afforded by the RNP’s features and characteristics. Furthermore, movement away from memory-focused visual experiences to imagination may reduce the identification of the learning cost associated with the RNP. We anticipate that the result of these effects will be improved evaluation of the RNP in question (Mukherjee and Hoyer 2001).

The central focus of the current research is to assess the impact of imagination-focused visualization on the evaluation of RNPs. However, without the comparison to a more incremental product (INPs, which represent continuous rather than groundbreaking innovations), we would not be able to qualify product newness as an important boundary condition for the positive impact of imagination-focused visualization. Two fundamental differences between RNPs and INPs that are noteworthy in our research context are the inclusion of new and unfamiliar benefits and the related additional learning costs that are more likely to be required in the case of RNPs (Gourville 2006; Hoeffler 2003; Mukherjee and Hoyer 2001). Imagination focus leads to higher evaluation of the RNP because it highlights novel benefits that tend to be undervalued by consumers in the marketplace. However, for an INP that only provides improvements on existing known benefits, the understanding and evaluation of the product benefits can easily occur even if consumers are centered on existing consumption patterns (Mukherjee and Hoyer 2001). Given this, the use of imagination-focused visualization is unlikely to produce different outcomes from more memory-focused visual images. In other words, imagination will not bring to life product characteristics and benefits that are already well known to the consumer. Furthermore, learning costs associated with INPs tend to be low regardless of the visualization used, given the incremental nature of the product advance.

On the basis of the foregoing discussion, we propose the following formal hypotheses:

H1: Imagination-focused visualization leads to higher evaluations of an RNP than memory-focused visualization; however, the type of visualization does not affect the evaluation of an INP.

H2: Imagination-focused visualization increases the perceived value of the product benefits of an RNP versus memory-focused visualization, but it has no impact on an INP.

H3: Imagination-focused visualization decreases the learning-cost considerations associated with an RNP versus memory-focused visualization, but it has no impact on an INP.

**EXPERIMENT 1: FOCUS OF VISUALIZING**

Experiment 1 tests our first hypothesis by manipulating the visualization focus. We asked participants either to visualize freely (in the memory-focused condition) or to use their imagination to visualize (in the imagination-focused condition) using either an INP or an RNP.

**Method**

One hundred fifty-nine students at a major southeastern university were recruited to complete the experiment; they were paid $5 as compensation for their participation. The experiment was a 2 (product type: INP, RNP) × 2 (visualization focus: memory-focused, imagination-focused) between-subjects design.

**Procedure.** We conducted the experiment in a blockwise manner, in which the memory-focused visualization and imagination-focused visualization conditions were run in separate blocks. Participants were randomly assigned to either the INP (ThinkPad) or the RNP (AudioPC) conditions in each visualization block. The experiment consisted of three stages: In the first stage, participants were given two minutes to read the general instructions and to examine the product information. In the second stage, they were instructed to visualize using the product. In the third stage, they responded to the dependent measures.

**Product stimuli and pretest.** In the INP conditions, participants evaluated a mock advertisement that included a picture of the latest version of an IBM ThinkPad computer. In the RNP conditions, the mock advertisement included a picture of Sony’s AudioPC product, which was under development at the time we conducted this research. We removed the company logo from each product and eliminated all brand identification information (i.e., the product was called XI-100 in all conditions). Both product information sheets had four components: the headline, the picture, a short description of the product underneath the picture, and a set of product features. The headline stated, “The XI-100 is the mobile product for people on the go.” The short description underneath the picture paralleled the headline: “The XI-100 ultra-portable notebook gives users outstanding performance in a small and light notebook.” After the short description, each product included a list of eight features (four were common features, and four were distinctive features; see the Appendix). These are all real features taken from the respective product descriptions. By definition, we expected the features of the RNP to be more novel, which enables an imaginative focus to affect the evaluation of these new benefits. Note that we used the same product stimuli in subsequent experiments.

We conducted a pretest to examine the key characteristics of the AudioPC (RNP) and the ThinkPad (INP) (i.e., level of benefit novelty and learning cost). Forty-eight students at a southeastern university viewed the mock advertisement for either the ThinkPad or the AudioPC. Afterward, they were asked to rate the benefits provided by the XI-100 on three nine-point scales (1 = “not very innovative, not very novel, not very original,” and 9 = “very innovative, very novel, very original”). Then, they answered a question about the amount of learning costs required to use the XI-100 (1 = “not much,” and 9 = “a lot”). We aggregated the three benefit-related measures into a benefit index (α = .89). The results showed that participants believed that the
AudioPC (RNP) provides significantly more novel benefits than the ThinkPad (INP) (M = 6.32 versus M = 4.97; F(1, 46) = 6.56, p < .05). At the same time, they indicated that it required significantly more learning cost to use the AudioPC than the ThinkPad (M = 4.43 versus M = 2.20; F(1, 46) = 19.16, p < .001). These results are consistent with the findings that highlight differences between INPs and RNPs in previous research (Hoefler 2003; Mukherjee and Hoyer 2001).

Visualization. After participants read the product information, they were told to turn to the next page to read the visualization instructions. In the memory-focused visualization conditions, participants read the following instructions:

When thinking about whether to buy new products, many consumers find that using visualization to form visual images (pictures in the mind) of the uses of the product can help them evaluate it.

Visualizing activities with the XI-100 may help you evaluate the XI-100. Please free your mind to visualize these activities (i.e., think about ways you will use computers) as you evaluate the XI-100.

These instructions to visualize freely have been shown to motivate memory-focused visualization (i.e., a person’s default approach to a visualization task) in both pretesting for this study and previous research (Dahl, Chattopadhyay, and Gorn 1999).

In the imagination-focused conditions, we directed participants to use an imaginative focus with the following instructions:

When thinking about whether to buy new products, many consumers find that using imagination to form visual images (pictures in the mind) of potential uses of the product can help them evaluate it.

Unleashing your imagination and visualizing new activities that you have never been able to do with computers before may help you evaluate the XI-100. Please push yourself to visualize these new activities (i.e., think about new ways you will use computers) as you evaluate the XI-100.

After all the participants read the instructions, the experimenter orally repeated the last sentence of each manipulation instruction and asked participants to close their eyes and visualize using the product for two minutes before moving on to the dependent measures. The experimenter timed participants’ visualization.

Measures. We used multiple items to capture the overall evaluation of the product. Participants were asked to indicate their overall evaluation of the XI-100 and how they would rate the XI-100 on a nine-point scale (1 = “bad, poor,” and 9 = “good, excellent”). Then, they were asked to indicate the amount of visualization they used to help their evaluations on a nine-point scale (1 = “very little visualization,” and 9 = “lots of visualization”) and to rate the type of activities they envisioned in the visualization exercise (1 = “mostly prior activities,” and 9 = “mostly new activities”). Participants also indicated how easy or difficult they found the visualization task (1 = “very easy,” and 9 = “very difficult”). Finally, participants described the mental pictures they had during the visualization task.

Results

Manipulation checks. Participants’ ratings on type of visualization (i.e., prior activities versus new activities) showed a significant main effect for visualization focus: Participants in the imagination-focused conditions envisioned significantly more new activities than those in the memory-focused visualization conditions, who accessed more prior activities (MImagination Focus = 5.06, MMemory Focus = 3.50; F(1, 155) = 23.89, p < .001). In addition, a coding of the cognitive responses by two research assistants who were blind to the hypotheses showed that participants in the memory-focused visualization conditions visualized a greater number of prior activities (MMemory Focus = 1.34, MImagination Focus = .97; F(1, 137) = 3.62, p = .05) and a lower number of new activities (MMemory Focus = .85, MImagination Focus = 1.38; F(1, 137) = 7.85, p < .01) than participants in the imagination-focused conditions.1 In addition, the measure of ease of visualization showed that imagination-focused visualization was perceived as more difficult than memory-focused visualization (MImagination Focus = 4.83, MMemory Focus = 3.68; F(1, 153) = 12.15, p < .001). These findings were consistent with expectations that when asked to visualize freely, participants would follow the path of least resistance and rely on past images.

We also found a marginally significant main effect of visualization focus for the amount of visualization realized by participants. Specifically, an imaginative focus led to slightly higher amounts of visualization than the memory focus (MImagination Focus = 5.85, MMemory Focus = 5.28; F(1, 155) = 3.19, p = .08). Given this, we used the amount of visualization as a covariate when analyzing the effects reported subsequently.

Product evaluation. We aggregated the two product evaluation questions into an evaluation index (α = .92). We conducted a 2 × 2 analysis of variance (ANOVA), controlling for the amount of visualization, and found that there was no main effect of product type (F(1, 154) = .65, p = .42) or visualization focus (F(1, 154) = .60, p = .44). However, as we predicted, there was a significant interaction between product type and visualization focus (F(1, 154) = 4.29, p < .05, ω² = .02).2 Imaginative-focused visualization increased participants’ evaluations of the RNP (AudioPC) compared with memory-focused visualization (MImagination Focus = 6.91, MMemory Focus = 6.21; F(1, 154) = 3.83, p < .05, ω² = .05), whereas there was no difference between the two types of visualization focus on participants’ evaluations of the INP (ThinkPad) (MImagination Focus = 6.29, MMemory Focus = 6.45; F(1, 154) = .76, p = .38; see Figure 1). These results support H₁.

Discussion

Experiment 1 showed that when participants were asked to employ imagination-focused visualization, they envisioned more new usages of the product, whereas when they

1The degree of freedom of the analysis for the cognitive responses was fewer than the degree of freedom of the analysis for the other measures because some participants did not describe their mental pictures (which was the last task of this study).

2All ω² values cited herein are partial ω² (Keren and Lewis 1979), excluding variance due to ANOVA terms unrelated to the tested effect. Partial ω² = σ²effect/(σ²effect + σ²error). The interaction without the visualization amount covariate is significant (F(1, 155) = 3.62, p = .05, ω² = .02).
were asked to simply visualize using the product, they relied on more readily available images from memory. More important, Experiment 1 demonstrated that compared with memory-focused visualization, imagination-focused visualization improved the evaluation rating of an RNP but had no impact on the evaluation of an INP, which provides initial support for H1. The interaction effect identified also had no impact on the evaluation of an INP, which provides visualization improved the evaluation rating of an RNP but with memory-focused visualization, imagination-focused visualization can lead to more thoughts about new usage activities. However, a potential alternative explanation for this finding is created by a potential imbalance between the visualization focus manipulations. Specifically, in an effort to move people off the path of least resistance, we used a strongly worded imagination-focused manipulation. This may have caused participants to be more motivated to complete the visualization task in this specific condition. To rule out this alternative explanation, in Experiment 2, we balanced the instructions to visualize across conditions to be more equivalent with respect to motivation toward the visualization task.

**EXPERIMENT 2: UNDERLYING MECHANISM**

Thus far, we have shown that imagination-focused visualization can lead to more thoughts about new usage activities and an improved evaluation of an RNP. However, the underlying mechanism for the positive role of imagination on the evaluation of RNP is unclear. Note that there were two key theoretical and empirical differences between INPs and RNP demonstrated in our pretest (i.e., novelty of benefits and level of learning costs). Accordingly, in Experiment 2, we proceed to investigate how the focus of visualization changes consumers’ perceived value of new product benefits and their perceptions of learning costs. In addition, as mentioned previously, we address a potential alternative explanation for our initial results by better balancing the visualization focus instructions.

**Method**

One hundred forty-one students at a southeastern university were recruited to complete the experiment for extra course credit. The experiment used the same design and product stimuli as Experiment 1. The procedure was also similar to Experiment 1 except for the revised visualization focus instructions and the additional measures that were added to the questionnaire.

In the memory-focused visualization condition, participants read the following:

> When thinking about whether to buy new products, many consumers find that using **visualization** to form visual images (pictures in the mind) of potential uses of the product can help them evaluate it.

**Visualizing activities** with the XI-100, may help you evaluate the XI-100. Please **free your mind to visualize these activities** (i.e., think about ways to use computers) as you evaluate the XI-100.

In the imagination-focused conditions, participants received the following instructions:

> When thinking about whether to buy new products, many consumers find that using **imagination** to form visual images (pictures in the mind) of potential uses of the product can help them evaluate it.

**Imagining new activities** that you have never been able to do with computers before may help you evaluate the XI-100. Please **free your imagination to visualize these new activities** (i.e., think about new ways to use computers) as you evaluate the XI-100.

As in Experiment 1, participants first indicated their evaluation of the XI-100 on the evaluation index ($\alpha = .91$). Then, they were asked to indicate the perceived value of the product benefits on the basis of three items: (1) how much they thought about the benefits provided by the product, (2) how much they thought about the usefulness of the product, and (3) how they would rate the importance of the benefits provided by the XI-100. Subsequently, they indicated the learning-cost considerations by answering the following question: How much did they think about the amount of time and effort associated with learning how to use the product? We measured these items on a nine-point scale (1 = “very little,” and 9 = “a lot”). Finally, manipulation check items for visualization focus and visualization amount were related.

**Results**

**Manipulation checks.** Our measure of visualization focus (i.e., prior activities versus new activities) showed that participants in the imagination-focused condition visualized more new activities than those in the memory-focused condition ($M_{\text{Imagination Focus}} = 5.29$, $M_{\text{Memory Focus}} = 3.84$; $F(1, 137) = 13.70, p < .001$). There was no difference in the amount of visualization across the imagination-focused and memory-focused visualization conditions ($M_{\text{Imagination Focus}} = 5.97$, $M_{\text{Memory Focus}} = 5.86$; $F(1, 137) = .92, p = .31$).

**Product evaluation.** We conducted a $2 \times 2$ ANOVA to test the effect of product type and visualization focus on product evaluation and found that there was no main effect of product type ($F(1, 137) = .04, p = .83$) or visualization focus ($F(1, 137) = 1.32, p = .25$). However, the anticipated
interaction between the two manipulated factors was significant (F(1, 137) = 3.62, p = .05, ω² = .02). Imaginative-focused visualization increased participants’ evaluations of the RNP (AudioPC) compared with memory-focused visualization (M_{Imagination Focus} = 6.96, M_{Memory Focus} = 6.35; F(1, 137) = 4.57, p < .05, ω² = .05). There was no difference between the two types of visualization focus on participants’ evaluations of the INP (ThinkPad) (M_{Imagination Focus} = 6.77, M_{Memory Focus} = 6.62; F(1, 137) = .30, p = .59; see Figure 2). This provides further support for H1.

**Underlying process.** We conducted a series of two-way ANOVAs to investigate the effect of visualization focus on participants’ perceptions of the INP and RNP regarding product benefits and learning costs. We created an index of perceived benefit value by combining the three related questions (how much they thought about the benefits of the product, how much they thought about the usefulness of the product, and how important the benefits are; α = .72) and found a significant interaction between type of product and focus of visualization (F(1, 137) = 5.24, p < .05, ω² = .03). Specifically, for the RNP, imagination-focused visualization enhanced the perceived value of product benefits compared with memory-focused visualization (M_{Imagination Focus} = 7.23, M_{Memory Focus} = 6.63; F(1, 137) = 4.36, p < .05, ω² = .05). However, imaginative focus did not change the perceived benefit value compared with memory-focused visualization for the INP (M_{Imagination Focus} = 7.14, M_{Memory Focus} = 7.46; F(1, 137) = .62, p = .43). This supports H2.

Regarding the measure of learning effort (how much participants thought about the required amount of time and effort of learning), there was a significant interaction between product type and visualization focus (F(1, 136) = 9.10, p < .005, ω² = .05): For the RNP, imagination-focused visualization enhanced the consideration of learning costs compared with memory-focused visualization (M_{Imagination Focus} = 4.26, M_{Memory Focus} = 2.68; F(1, 136) = 11.65, p < .001, ω² = .13), whereas for the INP, visualization focus had no impact on participants’ estimates of learning costs (M_{Imagination Focus} = 2.38, M_{Memory Focus} = 2.60; F(1, 136) = .24, p = .63). This was counter to our predication that an imaginative focus would decrease participants’ consideration of learning costs, and thus H3 was not supported. In addition, we found that learning cost had no impact on product evaluation (F(1, 132) = .82, p = .39).

**Mediation analyses.** We performed a set of additional analyses to test the potential mediating role of perceived value of product benefits on product evaluation in the RNP conditions (Baron and Kenny 1986). First, the visualization focus manipulation led to different perceptions of the benefit value (F(1, 139) = 4.15, p < .05). Second, perceived benefit value was significantly correlated with the product evaluation (r = .70, p < .001). Third, visualization focus significantly predicted product evaluation (F(1, 139) = 4.53, p < .05). Fourth, the effect identified in Step 3 became nonsignificant (F(1, 138) = .90, p = .35) after we added perceived value of product benefits as a covariate (F(1, 138) = 62.84, p < .001) in the analysis. Thus, there is a mediating role of perceived value of product benefits for the effect of visualization focus on product evaluation for the RNP.

In addition, a Sobel test (see http://www.psych.ku.edu/preacher/sobel/sobel.htm) confirmed this significant mediator (z = 1.92, p < .05).

**Discussion**

Experiment 2 replicated the findings of Experiment 1 for imagination- and memory-focused visualization and indicated that for an RNP, an imaginative focus leads to an enhanced evaluation. More important, this study identified that this imaginative focus increased the perceived value of product benefits of an RNP, and this increase in perceived value drives the enhanced evaluation realized. Notably, we did not find these patterns of effects for INPs. These findings provide support for both H1 and H2. Counter to our prediction in H3, we found that imaginative focus did not change consumers’ consideration of learning costs for the RNP. Indeed, our results showed that an imaginative focus increased people’s consideration of the learning costs for an RNP. However, this increased consideration of learning costs did not have an impact on subsequent product evaluations. For the INP, an imagination focus did not change the learning-cost considerations, nor did it affect evaluations.

**EXPERIMENT 3: THINKING ABOUT BENEFITS VERSUS LEARNING COSTS**

Experiment 2 showed that an imaginative focus enhanced the perceived value of product benefits compared with memory-focused visualization for the RNP, which led to higher evaluations. Does this imply that as long as people are prompted to focus on product benefits, product evaluation will be increased, or are there additional advantages brought by an imaginative perspective? To isolate the impact of the imaginative focus versus any additional attention toward the new benefits, in Experiment 3, we explicitly ask consumers to focus on the product benefits of an RNP while using memory-focused visualization. In addition, a counterintuitive finding in Experiment 2 is that when participants were asked to use an imaginative focus for the RNP, it led to increased consideration of the learning costs. However, this increased focus on learning costs did not lead to lower product evaluations. This seems to contradict the results from previous research (Mukherjee and Hoyer 2001). In Experiment 3, we address this issue by explicitly instructing participants to focus on learning costs in an...
effort to examine their unique effects on the evaluation of an RNP.

**Method**

One hundred eighteen students at a large southeastern university were recruited to complete the experiment for extra course credit. The experiment used a 2 (visualization focus: memory-focused versus imagination-focused) × 2 (content of visualization: product benefits versus learning costs) between-subject design. We used an RNP (i.e., the AudioPC) across all conditions. The procedure was similar to Experiment 2 with one exception: the revised instructions for the visualization content manipulation. In the memory-focused visualization conditions participants were told the following:

**Visualizing the potential positive aspects associated with buying and using the product [time and effort that is required to learn how to use the product] may help you evaluate the XI-100. Please free your mind to visualize these positive aspects [learning activities] as you evaluate the XI-100.**

In the imagination-focused conditions, participants received the following instructions:

**Imagining the potential positive aspects associated with buying and using the product [time and effort that is required to learn how to use the product] that you have never experienced with computers before may help you evaluate the XI-100. Please free your imagination to visualize these never-before-experienced positive aspects [never-before-experienced learning activities] as you evaluate the XI-100.**

We used a three-item scale to capture participants’ evaluations of the product: their overall evaluation of the XI-100, how they would rate the XI-100, and their attitude toward the XI-100 on a nine-point scale (1 = “bad, poor, dislike,” and 9 = “good, excellent, like”). Manipulation checks for the visualization content manipulation consisted of two items: (1) how much participants thought about the benefits provided by the product and (2) how much they thought about the time and effort of learning required to use the product. These items were measured on nine-point scales (e.g., 1 = “very little,” and 9 = “a lot”).

**Results**

**Manipulation checks.** The product benefits measure showed a main effect only for the visualization content manipulation (M_{Benefit} = 7.17, M_{Learning Cost} = 6.40; F(1, 114) = 5.35, p < .05), indicating that participants in the benefit conditions indeed focused more on product benefits than those in the learning-cost conditions. The learning-cost measure also only showed a main effect for visualization content (M_{Learning Cost} = 5.76, M_{Benefit} = 3.07; F(1, 114) = 36.21, p < .001), indicating that participants in the learning-cost conditions focused more on learning costs associated with the product than those in the benefit conditions.

**Product evaluation.** We first created a product evaluation index (α = .90) from the three evaluation items. We conducted a 2 × 2 ANOVA for this index and found no main effect of visualization focus (F(1, 114) = 20, p = .66) or content of visualization (F(1, 114) = 2.13, p = .15). However, there was a significant interaction between these two manipulated factors (F(1, 114) = 4.41, p < .05, ω² = .03; see Figure 3). We performed a series of contrast tests to address the specific questions of interest. First, a comparison between the imagination-focused and the memory-focused conditions when thinking about product benefits showed a significant difference in product evaluation (M_{Imagination Focus/Benefit} = 7.01, M_{Memory Focus/Benefit} = 6.42; t(1, 114) = 1.81, p < .05, ω² = .04), indicating that the advantage in evaluation is not just the increased focus on benefits per se; rather, it is produced by the imaginative perspective itself. Indeed, participants in the memory-focused visualization group were also asked to focus explicitly on the positive product benefits, but their evaluations were lower than those resulting from imagination-focused visualization. Second, we found that within the imagination-focused conditions, thinking about product benefits led to a significantly higher evaluation than thinking about learning cost (M_{Imagination Focus/Learning Cost} = 6.18, M_{Memory Focus/Learning Cost} = 6.57; t(1, 114) = 1.16, p = .29).

**Discussion**

Experiment 3 provided two important findings. First, it showed that the positive impact of imagination is not simply due to a focus on product benefits. When participants were asked to visualize product benefits explicitly, we found that an imaginative focus still led to improved evaluations compared with memory-focused visualization. This implies that the imaginative perspective brings addi-
tional advantages in the evaluation process. Second, Experiment 3 showed that when participants were asked to focus specifically on learning costs while using their imagination, their product evaluation ratings decreased. This is in contrast to our results in Experiment 2, which suggested that learning costs do not affect product evaluation in an imaginative context. In this instance (Experiment 2), the weight of product benefits seemed to dominate learning costs. However, when learning costs were given an explicit focus (Experiment 3), these considerations dominated the appreciation of product benefits that accrues to imagination, resulting in evaluations that were more consistent with those found in the memory-focused conditions.

GENERAL DISCUSSION

In this research, we examined the impact of different forms of visualization on the evaluation of RNPs versus INPs and compared memory-focused visualization with imagination-focused visualization. In Experiment 1, we demonstrated that the focus of the visualization task had an important impact on the evaluation of an RNP but no impact on the evaluation of an INP. Specifically, encouraging participants to employ an imaginative focus led to higher evaluations of an RNP than a more memory-based visualization focus. In Experiment 2, we investigated the underlying process for the positive effect of imagination-focused visualization on the evaluation of an RNP. We found that compared with a memory-focused visualization, imagination-focused visualization increased the perceived value of product benefits for the RNP, which enhanced its evaluation. For the INP, imagination did not change this internal process and thus did not change product evaluations. Experiment 2 also showed that though an imaginative focus increased the perceived value of product benefits, it also led to enhanced consideration of learning costs that were required to use the RNP. However, this enhanced learning-cost consideration had a negligible effect on product evaluations. In Experiment 3, we explicitly asked participants to think about either the product benefits or the learning cost associated with the RNP using either memory-focused or imagination-focused visualization. We found that even when participants in both the memory- and the imagination-focused conditions were explicitly encouraged to focus on product benefits, imagination focus still led to higher product evaluations than memory-focused visualization. In addition, we showed that when participants were asked to focus exclusively on learning costs while using imaginative visualization, the advantage of imaginative focus for product evaluation was attenuated.

Contributions and Further Research

The results add significantly to recent research on mental simulation and new product learning by identifying the importance of different types of visualization focus. Prior research studying the effect of mental simulation has indicated a positive role of visualization in terms of product evaluations for various INPs and services (e.g., Escalas and Luce 2003, 2004; Phillips 1996; Shiv and Huber 2000). For example, a person’s visualizing how he or she might incorporate a new shampoo into his or her daily life should lead to an enhanced evaluation of the product because of the facilitated planning (Escalas and Luce 2004). A person’s visualizing how he or she would interact with new running shoes or an incrementally new computer should increase the evaluation of the product because of self-referencing (Escalas 2004; Dahl and Hoeffler 2004). However, when applied to RNPs, we found that visualization had a negative effect on product evaluation (Dahl and Hoeffler 2004). We contribute to this literature by proposing an explanation for the negative effect of traditional visualization on RNPs. We show that because consumers often choose the path of least resistance, their default visualization is based on existing product uses from their memories, which are easily accessible, rather than on the novel product benefits of the RNP, which leads to discounted product evaluation. In this research, we emphasize the concept of “imaginative focus” and show that only if people are explicitly instructed to focus on the never-before-experienced new uses does their visualization enhance product evaluations of an RNP.

In this work, we define RNPs as products that include new benefits and require a high learning cost. Although the primary product type that we studied is a technology-based RNP, from a broader perspective, our definition also includes other types of products and services whose benefits and costs are not understood for individual consumer groups. For example, a baby stroller is not typically an RNP from the technological point of view. However, for new parents who have no experience with this type of product, the benefits and learning costs of a stroller may not be easily understood, and it could be an RNP for them. Thus, we believe that our findings (i.e., positive role of imagination-focused visualization for the evaluation of RNPs) are not only applicable to just new technological products but also generalizable to all products and services that are characterized by high levels of novelty and learning costs for the consumer.

Another important contribution of this research is the identification of how this imaginative focus enables better product evaluations of an RNP. The results indicate that imagination enhances the perceived value of product benefits, and this in turn leads to improved product evaluations. Importantly, we establish that it is not simply a focus on product benefits per se but rather something specific about imaginative visualization that enhances the perceived value of the benefits inherent in the RNP. While a memory focus limits participants’ imagery to existing product usage scenarios, an imagination focus opens up a new perspective, which overcomes the constraints of any current usage and unleashes participants’ imagery in a way that they have never experienced before. We speculate that the freedom participants enjoyed during the imagination process enabled them to construct visual images that brought to life the value of the new features of the RNP (Finke 1990; Finke, Ward, and Smith 1992). Further research should attempt to validate this idea and to provide a better understanding of how imagination achieves advantage in this new product learning context.

Another potential explanation for the positive effect of imaginative focus on the evaluation of an RNP is that the visualization task might simply enable consumers to realize more benefits, which in turn raises evaluations. In our studies, we provided the benefits to the consumers, and our assumption was that they would focus on the benefits provided and that it was the difference in how they thought...
about these benefits that drove the results (i.e., imaginative focus enabled consumers to appreciate the new and novel benefits better, as shown by the increases in the perceived value of the benefits). However, it is possible that they generated more benefits on their own in a specific condition. Although we found no evidence of additional benefit thoughts in the cognitive responses in our studies, it is a worthwhile idea for further research.

Finally, our results provide new insights into the role of learning costs in the evaluation of RNPs. Previous research (Mukherjee and Hoyer 2001) has shown that learning costs have a negative impact on the evaluation of new products. However, we find that when participants were asked to use their imagination regarding an RNP, though attention to learning costs increased, this focus did not have an influence on overall product evaluation. It was only when we explicitly focused participants on the learning costs in their imagination that we obtained results that matched previous research (i.e., lower evaluations for the RNP). We believe that when participants were not focused directly on the learning costs (i.e., when product benefits and learning cost received equal playing time), the advantage obtained by the imagination-focused visualization with respect to product benefits outweighed the learning-cost considerations, leading to a higher evaluation of the RNP. Further research could tease apart consumers’ attention to versus weight assigned to learning costs in different imaginative contexts to gain a better understanding of the relationship between product benefits and learning-cost considerations.

Managerial Implications

Much of previous research that has focused on RNPs has cautioned managers about their approaches to introducing new products into the marketplace. For example, the use of analogies to help consumers learn about RNPs has been shown to have limited applicability for consumers who have experience in the domain (Moreau, Lehmann, and Markman 2001). The promotion of novel features has also been shown to provoke learning-cost inferences with negative outcomes (Mukherjee and Hoyer 2001). Furthermore, studies on the effects of visualizing uses of an RNP have consistently found that visualizing the product’s fit with existing usage patterns lowers consumers’ product evaluations (Dahl and Hoeffler 2004; Hoeffler 2003). However, the current research provides managers with a new product-learning approach that enhances consumer evaluations and reactions to an RNP. Indeed, our research shows that managers can use a specific form of visualization to help consumers learn about an RNP’s novel benefits without adversely affecting evaluations.

This research suggests that when marketing RNPs, managers should encourage customers to use their imagination and focus on the new uses they have never experienced before. Having consumers envision the usage of these new benefits may help them realize the value of those benefits, leading to higher evaluation of these RNPs. Managers could use different promotion methods to evoke imagination-focused thoughts about the RNP. For example, in their print advertisements, television advertisements, or Web advertisements, managers could encourage consumers to focus on the imaginative new uses they have never experienced before rather than just visualizing how they would use the product in their current daily activities. With regard to the Tablet PC example mentioned at the beginning of this article, our results suggest that convincing consumers to go beyond their existing knowledge about how they traditionally use a computer and, instead, to imagine the new possibilities of using the digital pen to interact with the computer would be an effective way to increase their evaluations of this new product.

APPENDIX: PRODUCT FEATURES (EXPERIMENTS 1–3)

Product Features for the INP

- Keyboard light to illuminate the keyboard in low light.
- Titanium cover provides extra light and enhanced durability.
- Extended life battery allows up to 4 hours of computing.
- Optimized for connectivity with flexible connection options.
- Lightweight (weighs about 4.5 pounds).
- 14” TFT screen.
- Intel Pentium M processor at 1.73GHz.
- Three-year limited warranty.

Product Features for the RNP

- Biometric smart pen recognizes, stores, and converts handwritten text.
- Chip-based audio recorder synchronizes with handwritten notes.
- PDF file enhancer allows for onscreen annotation.
- Wearable computer attachment has eyeglass-mounted LCD display.
- Lightweight (weighs about 4.5 pounds).
- 14” TFT screen.
- Intel Pentium M processor at 1.73 GHz.
- Three-year limited warranty.

REFERENCES


Imagination-Focused Visualization 55


