IS A PICTURE ALWAYS WORTH A THOUSAND WORDS? THE IMPACT OF PRESENTATION FORMATS IN CONSUMERS' EARLY EVALUATIONS OF REALLY NEW PRODUCTS (RNPS).

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Abstract

Really new products (RNPs) enable consumers to do things they have never been able to do before. However, research has shown that consumers have difficulties understanding the benefits of such novel products, and therefore adoption intentions remain low. Mental simulations and analogies have been identified as effective framing strategies to convey the benefits of RNPs. However, existing research has focused solely on the use of mental simulations and analogies conveyed using words, whereas these can also be conveyed using pictures. Although the general consumer research literature points to a superiority effect of pictures, because the underlying mechanisms that individuals use to understand RNPs differ entirely from those used for traditional products, there is a need to study the impact of pictures for RNPs. Moreover, prior work has not examined differences in RNP type. The present research argues that RNPs can be utilitarian, hedonic, or hybrid and that the optimal presentation format (words vs. pictures) is contingent upon the type of RNP considered. Consequently, failure to acknowledge this distinction could lead to negative consequences. The present study aims to identify the impact of alternative presentation formats (i.e. words vs. pictures) presented using different framing strategies (i.e. analogies vs. mental simulations) on individual responses (i.e. product comprehension and attitude to the product) to three types of RNPs (i.e. utilitarian vs. hedonic vs. hybrid). Hypotheses are tested by means of an experimental study. The results of the study show that the effectiveness of alternative combinations of framing strategies and presentation formats in enhancing comprehension and attitude for RNPs depends on product type (utilitarian vs. hedonic vs. hybrid). The empirical findings presented not only extend prior work on consumer responses to mental simulations and analogies for RNPs but also establish connections between this literature and an underdeveloped stream of research on hybrid products, as well as a broader stream of research on utilitarian vs. hedonic product benefits. The findings suggest that practitioners may not have been using optimal marketing communications strategies to convey the benefits of RNPs. Strategies which may help enhance consumer responses to RNPs by taking into consideration product type (utilitarian vs. hedonic vs. hybrid) are put forward.

Introduction

The Fujifilm FinePix Real 3D W3 camera automatically merges two shots taken of the same subject from different positions and displays the captured images as a single photo which the consumer can instantly see on the camera's 3D screen (FujiFilm Global, 2011). At introduction, this camera's immediate on-screen 3D viewing offered consumers novel photography experiences. Such innovations, often defined as really new products (RNPs), enable consumers to do things that cannot be easily done with existing products (Hoeffler, 2003). However, because by definition consumers have limited knowledge about RNPs, the benefits of consumption are more uncertain for these products than for incrementally new products (INPs), that is, products that involve more continuous innovations with little learning costs, such as a new digital camera (Zhao, Hoeffler, and Dahl, 2009). Newness is therefore conceptualized as the perceived newness of a product in the eyes of consumers (Alexander, Lynch, and Wang, 2008). RNPs also require consumer learning and induce behavioral changes (Urban, Weinberg, and Hauser, 1996). The Segway scooter, the Tablet PC and the PDA could all be classified as RNPs at the time of launch. Additional examples of a) products which were RNPs when they were introduced into the marketplace as identified in prior work and b) concept RNPs under development that have not been introduced onto the marketplace are presented in Exhibit 1 and 2 at: http://www.wix.com/stephaniefeiereisen1/stephaniefeiereisen#!additional-material-jpim-article.

While firms should prioritize new product development (NPD) to sustain healthy market shares (Hoeffler, 2003), new product failure rates continue to sky rocket (Urban, Weinberg, and Hauser, 1996). Failures are partially due to the burden placed on consumers to learn about the new product benefits (Gourville, 2005). Analogies and mental simulations have been identified as useful framing strategies (Hoeffler, 2003) to help consumers learn about RNPs. For example, the benefits of 3D cameras have been conveyed using mental simulation: "Imagine shooting clouds from the window of your flight and capturing the scene in super 3D" (FujiFilm Global, 2011) and analogies "3D is to 2D what talkies were to silent films" (Krasnoff, 2010).

Prior work (Hoeffler, 2003) has found that mental simulation improved preference stability for a RNP, whereas analogies did not. The present study builds on this work by identifying two variables which have been given little consideration in previous research: RNP type (utilitarian vs. hedonic vs. hybrid) and presentation format (words vs. pictures). First, RNPs can be classified as utilitarian, hedonic, or hybrid. Utilitarian benefits refer to the functional, instrumental, and practical benefits of a product whereas hedonic benefits refer to the product's aesthetic, experiential, and enjoyment benefits (Batra and Ahtola, 1990). A hybrid product possesses both utilitarian and hedonic characteristics (Leclerc, Schmitt, and Dubé-Rioux, 1989). For example, the IBM Transnote (Dahl and Hoeffler, 2004) described as a new mobile personal computer with a digital notepad that enables handwritten ideas to be captured and to be transferred to a digital computer file is a utilitarian RNP. Contrarily, 3D cameras (Hoeffler, 2003) are hedonic RNPs.

Second, presentation format is an important variable as mental simulations and analogies can be conveyed not only using words, but also using pictures (Delbaere and Smith, 2007). The general consumer research literature suggests that both mental simulations (Rossiter and Percy, 1980) and analogies (Delbaere and Smith, 2007) can be powerful tools for persuasive communication when conveyed with pictures. However, the underlying mechanisms that individuals use to understand RNPs differ entirely from those used for traditional products (Hoeffler, 2003), as RNPs are characterized by a greater degree of uncertainty and higher learning costs (Alexander, Lynch, and Wang, 2008). Therefore, it is essential to study the impact of pictures in the context of RNPs.

This study's overall research question is: For each product type (i.e. utilitarian vs. hedonic vs. hybrid), are mental simulations and analogies more effective in enhancing consumer responses (i.e. product comprehension and attitude to the product) when they are presented with words or with pictures? An experiment that empirically investigates this question is reported. The findings not only extend prior work in consumer responses to RNPs (Feiereisen, Wong, and Broderick, 2008), but also contribute to research on congruity theory (Johar and Sirgy, 1991), on rhetorical works (McQuarrie and Phillips, 2005), and specifically to the resource-matching perspective (Anand and Sternthal, 1990). They also link these literatures to an underdeveloped stream of research on hybrid products (Leclerc, Schmitt, and Dubé-Rioux, 1989), and to a broader stream of research on utilitarian and hedonic products (Gill, 2008). The findings provide marketers with guidance on communicating the benefits of RNPs according to product type.

Identifying Framing Strategies for RNPs

Prior work has emphasized the similarities of categorization and analogy, resulting in a blurring of the theoretical boundaries between these concepts. However, the two are distinct processes with important differences for the study of responses to RNPs.

The categorization literature in social and cognitive psychology conceptualizes categories as tools for organizing knowledge rather than for using or applying new knowledge. The categorization paradigm is therefore useful to examine the transfer of beliefs among similar products, such as the transfer of beliefs from the camera category to a new camera, but it is of limited use for studying knowledge transfer across categories (Gregan-Paxton and John, 1997). For instance, although a great deal can be learned about a new camera by transferring information from the camera category, much information can also be gained by information transfer from an unrelated category i.e. the human eye (the camera needs light for a good picture in the same way the human eye needs light to see clearly) (Gregan-Paxton and John, 1997). Importantly, while categorization helps an individual organize a novel stimulus in memory, analogical transfer entails the use of a knowledge structure to enable new learning about the novel stimulus. Because a heavy learning burden is placed on consumers to learn about the novel benefits of RNPs (Lehmann, 1994), the use of an analogical transfer paradigm which accounts for new learning as opposed to organization in memory, is necessary. Thus, the present research does not use categorization as a framing strategy for RNPs.

Research in psychology builds on the structure-mapping theory of analogy (Gentner, 1989) to define an analogy as the mapping of knowledge from one familiar domain (the base) onto an unfamiliar, unknown domain (the target). Much of the existing work on consumer knowledge transfer has been guided by the categorization literature. As argued above, the categorization paradigm overlooks situations where products do not fit into any existing category, which is the case for RNPs (Lehmann, 1994). Research has thus turned to analogies to explain learning for RNPs (Gregan-Paxton and John, 1997). The use of an analogy to compare the RNP (i.e. target) with a familiar domain (i.e. base) provides the structural knowledge needed to elaborate on new product information. Advertising examples can illustrate what an analogy actually is. An analogy can be conveyed using words or using pictures. The campaign for the Samsung and Adidas 'miCoach' (a sports music phone with a unique personal coaching system built in) compared the product with a coach. As a coach gives feedback on progress from one training session to another, one may infer that the kit possesses a similar progress-tracking function. Moreover, an analogy can be conveyed using pictures. The advertisement for the AxioMatic diskette duplicator reported by Ait El Houssi (2010) uses a visual analogy on reproduction. These advertisements can be viewed by accessing Exhibit 3 at: http://www.wix.com/stephaniefeiereisen1/stephaniefeiereisen#!additional-material-jpim-article.

Mental simulation is defined as the imitative mental representation of some event or series of events (Taylor et al., 1998). Its use as a framing strategy is well established. Mental simulations have a variety of positive effects on product judgment, including improving consumers' attitude towards products (Escalas and Luce, 2003). Mental simulation enhances the evaluation of a target product through engaging participants in different types of processing, such as narrative transportation, which persuades via positive feelings and reduced critical thinking (Green and Brock, 2000; Van Laer and De Ruyter, 2010). Imagery does not facilitate comparisons between alternatives, but is well-suited for constructing a detailed product-usage scenario for one alternative (Oliver, Robertson, and Mitchell, 1993).

Moreover, mental simulation may be an appropriate cognitive process to help consumers learn about the new benefits of RNPs. Recent research using mental simulations has not examined the effect on product comprehension and learning per se. However, prior work has emphasized the ability of mental simulations to reduce the uncertainties that arise as a result of product newness (Hoeffler, 2003), which may enhance product comprehension. The need to use mental simulation to imagine a situation of product usage may be higher for RNPs than for regular products, as there is a need to assess the consequences of product use (Oliver, Robertson, and Mitchell, 1993). Mental simulation may provide experience value as consumers cannot use prior product experience to gauge potential benefits of adoption of the RNP. Because mental simulations can act as a proxy for experience (Taylor et al., 1998), they provide a means to deal with uncertain future such as learning to use the product. Mental simulations with words and with pictures for the Tablet PC, classified as a RNP by Zhao, Hoeffler, and Dahl (2009), are presented in

Exhibit 3 at: http://www.wix.com/stephaniefeiereisen1/stephaniefeiereisen#!additional-material-jpim-article.

Conceptual Framework and Hypotheses Development

Figure 1 presents the conceptual framework of the study. It examines the extent to which the impact of presentation formats (words vs. pictures) on the outcome variables (product comprehension and attitude toward the product) depends on the framing strategy used (analogy vs. mental simulation) and on RNP type (utilitarian vs. hedonic vs. hybrid). No analogy/ no mental simulation conditions are also included.

Place Figure 1 here

Following a review of previous work, no research to date has examined the impact of both presentation format and RNP type on the outcome variables. For a summary of variables examined in previous research on individual responses to RNPs, see Exhibit 4, available at: http://www.wix.com/stephaniefeiereisen1/stephaniefeiereisen#!additional-material-jpim-article.

By definition, analogies rely on inferences, cognitive processes which unique characteristic is to go beyond the given information (Fishbein and Ajzen, 1975). Importantly, inferences arising from analogical transfer are guesses and may not convey an accurate representation of the target product (Gentner, 1989). Past research on RNPs has shown that verbal analogies can be effective framing strategies, but also run the risk of misinforming consumers (Hoeffler, 2003). An analogy presented using pictures instead of words should further increase this risk as one of the main syntactic properties of visual communication is its lack of explicit means to identify how pictures relate to each other (Messaris, 1997). Words can explicitly evoke an analogy between two products whereas pictures do not have an equivalent type of syntax to express analogies. Moreover, the wide range of inferences induced by visual analogies (McQuarrie and Phillips, 2005) increases the risk that subjects make the wrong inference about the benefits of the RNP.

Consistent with prior work, utilitarian benefits refer to the functional, instrumental, and practical benefits of a product whereas hedonic benefits refer to the product's aesthetic, experiential, and enjoyment-related benefits, and to its ability to provide feelings (Batra and Ahtola, 1990). For example, Whirlpool's personal valet (Foster, Golder, and Tellis, 2004), a substitute for dry-cleaning services which can be used at home, is a utilitarian product which provides functional benefits. Contrarily, 3D TVs provide hedonic benefits. In the present research, a hybrid product is conceptualized as a product that provides utilitarian and hedonic benefits (Leclerc, Schmitt, and Dubé-Rioux, 1989). For example, the Intelligent Oven used in this study's experiment is a hybrid product which provides both utilitarian benefits i.e. practical benefits as users can program cooking remotely, and hedonic benefits i.e. Enjoyment of a home-made meal. Visual analogies are expected to hinder individual comprehension for a RNP, independent of product type (utilitarian vs. hedonic vs. hybrid). This is consistent with the view of humans as "cognitive misers"

(Fiske and Taylor, 1991), reluctant to engage in the extensive cognitive thinking required by a visual analogy. As the understanding of pictures relies on shared knowledge between sender and receiver, individuals may not develop high product comprehension based on a visual analogy, as they may not have the required product knowledge. Thus:

Hypothesis 1: When the framing strategy is an analogy, the use of words will trigger a higher product comprehension than the use of pictures for a) a utilitarian product, b) a hedonic product and c) a hybrid product.

Analogies are rhetorical figures, able to enhance attitudes via indirect persuasion mechanisms (McQuarrie and Phillips, 2005). Indirect persuasion strategies are usually effective because consumers must self-generate the implicit claim which tends to be more accessible and less subject to counter-arguing (Lee and Olshavsky, 1995). However, in the specific case of RNPs where individuals may require more guidance to develop positive attitudes due to limited prior knowledge for such products, the wide range of inferences generated by visual analogies may actually hinder the persuasive effect of the advertisement as the cognitive process required may be too demanding. The weak-implicature model of indirect persuasion (McQuarrie and Phillips, 2005) which relies on the spontaneous generation of inferences, may only hold for products for which individuals have well-developed knowledge structures. Because individuals are novices with respect to RNPs, they may be unable to solve the analogical incongruity conveyed using pictures that are by nature implicit. Consumers typically have to learn about new benefits in order to appreciate RNPs (Lehmann, 1994).

This is consistent with Hoeffler's (2003) 3-step process for RNPs: 1) Learning about the product, 2) Understanding the product benefits, 3) Estimating the personal usefulness of the new benefits. The first step of learning about the product is more effortful for RNPs than for INPs. In the second step, relational analogies should help individuals understand product benefits by drawing on the benefits of products from another domain (Gregan-Paxton and John, 1997). Finally, the third step should lead to the development of positive attitudes for RNPs. In particular, prior work on the persuasiveness of analogies has established that because the greater elaboration of favorable relational information generally results in greater message persuasion (Petty and Cacioppo, 1981), an analogy can be a highly persuasive device provided that consumers have adequate resources to process it (Roehm and Sternthal, 2001). The resources required to process visual analogies are likely to exceed consumers' resources as they have a low familiarity with RNPs. Hence, it is predicted that because consumers will experience difficulties in conducting relational mapping for pictorial analogies (Roehm and Sternthal, 2001), they will be unable to develop a positive attitude towards the product in this situation. Thus:

Hypothesis 2: When the framing strategy is an analogy the use of words will trigger a more positive attitude to the product than the use of pictures for a) a utilitarian product, b) a hedonic product and c) a hybrid product.

Mental simulations can also be conveyed using words or using pictures (Babin and Burns, 1992). Prior work on RNPs has mostly focused on mental simulations presented

with words (Hoeffler, 2003). While it was hypothesized that the pattern of results would be consistent across products when the framing strategy is an analogy, it is expected that the effectiveness of words vs. pictures for mental simulations will depend upon RNP type i.e. utilitarian vs. hedonic vs. hybrid. Unlike analogies, mental simulations do not rely on inferences but on mental representations, the effectiveness of which depends on the congruity between the presentation format and the product type.

According to congruity theory (Sirgy, 1982), advertising effectiveness will be enhanced if the nature of the appeal is congruent with product type. Specifically, hedonic appeals are more effective than utilitarian appeals when the product is perceived as hedonic rather than utilitarian because consumers experience a match between the image characteristics of the product and their self-concept (self-congruity), resulting in enhanced persuasion. Conversely, utilitarian appeals are more effective than hedonic appeals when the product is perceived as utilitarian, mainly because consumers experience a match between the product's functional characteristics and their desired set of characteristics (functional congruity), resulting in greater persuasion. Importantly, research has shown that words are regarded as more utilitarian than pictures (Hirschman, 1986). This is explained by cultural norms which equate language (and therefore the use of words) with rationality (Polanyi and Prosch, 1976). This claim is based on the textual nature of the format itself, not on the content of the claim and the presence of emotion-laden words or pictures in the appeal (Hirschman, 1986). Similarly, hemispheral lateralization theory states that semantic data tend to activate the more rational left cerebral hemisphere, hence a perception of heightened utility (Hansen, 1981). Furthermore, also based on cultural norms and hemispheral lateralization theory, pictures are likely to be regarded as more aesthetic and hedonic than words (Polanyi and Prosch, 1976). Following this, mental simulation conveyed using words, because it should be perceived as a more utilitarian appeal compared to pictures, should trigger a higher product comprehension than mental simulation using pictures for utilitarian RNPs. Contrarily, mental simulation conveyed using pictures should trigger a higher product comprehension than mental simulation conveyed using words for hedonic RNPs. Therefore:

Hypothesis 3a): When the framing strategy is a mental simulation, the use of words will trigger a higher product comprehension than the use of pictures for a utilitarian product.

Hypothesis 3b): When the framing strategy is a mental simulation, the use of pictures will trigger a higher product comprehension than the use of words for a hedonic product.

The LSC (Levels of Subjective Comprehension) model (Mick, 1992) suggests that deep comprehension levels have strong and positive relations with post-exposure attitudes. The comprehension of the self-relevant product consequences should have stronger effects on product attitudes. Because RNPs are by definition complex, high-involvement products, it is expected that consumers will develop positive attitudes for the product provided they comprehend and learn about product-relevant information (Bettman, 1979). In line with Hoeffler's (2003) 3-step process for RNPs, mental simulation can help consumers understand the attribute-benefit links for RNPs, by helping them merge the RNP with their existing usage pattern (Taylor et al., 1998). Finally, mental simulations can assist

consumers in their efforts to estimate the personal usefulness of the new product benefits. This should lead to persuasion, as understanding that the product benefits can positively contribute to one's life should translate into a positive product attitude. Using mental simulation helps consumers reach this stage by helping consumers visualize how the new product fits with existing usage patterns (Hoeffler, 2003), provided that presentation format is congruent with product type. Thus:

Hypothesis 4a): When the framing strategy is a mental simulation, the use of words will trigger a more positive attitude to the product than the use of pictures for a utilitarian product.

Hypothesis 4b): When the framing strategy is a mental simulation, the use of pictures will trigger a more positive attitude to the product than the use of words for a hedonic product.

Although the term hybrid product has not been used in the literature on RNPs, it has been utilized in research on incrementally new products. In line with Leclerc, Schmitt, and Dubé-Rioux (1989)'s categorization, a hybrid RNP is conceptualized as a type of RNP that possesses both utilitarian and hedonic characteristics. Because of this dual nature, it is expected that the congruity effect will operate both between the utilitarian product dimension and the use of words as a presentation format, and between the hedonic product dimension and the use of pictures. Thus, a mental simulation conveyed using pictures will be equally capable of enhancing comprehension and attitude for a hybrid RNP as a mental simulation conveyed using words. Thus:

Hypothesis 5a): When the framing strategy is a mental simulation, there will be no significant difference in product comprehension when the strategy is conveyed with words vs. with pictures for a hybrid product.

In line with Hoeffler's (2003) 3-step framework which discusses how consumers progress from learning about the product to estimating the personal usefulness of product benefits, and thus to developing a positive attitude towards the product, the following hypothesis is put forward:

Hypothesis 5b): When the framing strategy is a mental simulation, there will be no significant difference in attitude to the product when the strategy is conveyed with words vs. with pictures for a hybrid product.

Method

Procedure

The experiment was conducted among 853 respondents (59.2% were female). The experiment was a 3 within-subjects (framing strategy: mental simulation vs. analogy vs. no analogy/ no mental simulation) X 2 between-subjects (presentation format: words vs.

pictures) X 3 between-subjects (product type: utilitarian vs. hedonic vs. hybrid) design. Product and advert type were presented in balanced orders to reduce carryover effects.

First set of pre-tests

Three RNPs were chosen via pre-test: the Digipen, the Video Glasses, and the Intelligent Oven. At the time of launch these products enabled consumers to do things that they could not easily do before. The Digipen enables users to easily transform handwritten information into an electronic document, without having to type their notes. The Intelligent Oven enables users to cook their food remotely, so that their dinner is ready when they get back home from work. The Video Glasses enable users to have a personal video experience and watch videos downloaded on a cell phone onto a large screen.

The pre-test (N=53) ascertained that the respondents had limited familiarity with the products. The participants were asked: How familiar are you with this product? (1=not very familiar to 7=very familiar; Dahl and Hoeffler, 2004). The participants had limited familiarity with the products and the three products did not vary in terms of perceived familiarity (M.digipen=2.92; M.video glasses=2.68; M.intelligent oven=2.22; $p>0.05$ on a 7-point scale). In addition, 10 interviews were conducted with another set of respondents as an additional verification that the participants had a limited familiarity with the products, and that the products were viewed positively.

Three analog bases were selected through pre-testing (DigiPen: secretary; Video Glasses: cinema projector; Intelligent Oven: cook). Participants were asked to rate how easy it was to understand the comparison between the base and the target (not easy at all=1 to very easy=7). The pre-test showed that the ease of understanding the analogy between base and target did not significantly differ across products (M.video glasses=4.12; M.intelligent oven=4.71; M.digipen=4.92; $p>0.05$). Furthermore, Hoeffler (2003) identifies participants' unfamiliarity with the base as a reason explaining why an analogy may be ineffective. Participants were asked to rate how familiar they were with the base (not familiar at all=1 to very familiar=7). Respondents were familiar with the base domains and no significant differences across products were identified (M.cinema projector=4.78; M.cook=5.66; M.secretary=5.08; $p>0.05$).

Fifteen respondents were interviewed to ascertain that each product pertained to the product type identified. 100% agreement was reached among the participants, who all identified the Digipen as utilitarian, the Video Glasses as hedonic and the Intelligent Oven as hybrid. In addition, 37 respondents who did not participate in the other pre-tests viewed the three products in random order, and indicated for each product whether the product was ineffective/ effective, unhelpful/ helpful, not functional/ functional, not useful/ useful, impractical/ practical, met a goal/ did not meet a goal (utilitarian benefits, adapted from Voss, Spangenberg, and Grohmann, 2003). They also stated whether they thought the product was not fun/ fun, dull/ exciting, not delightful/ delightful, unenjoyable/ enjoyable, not appealing to the senses/ appealing to the senses, not pleasant/ pleasant (hedonic benefits, adapted from Voss, Spangenberg, and Grohmann, 2003). The

Digipen was categorized as utilitarian as the mean obtained for the utilitarian product benefits was significantly higher than that of the hedonic product benefits ($M_{utilpen}$=5.50; $M_{hedopen}$=4.25; t=4.258, df=33, p=0.000). The Video Glasses were classified as hedonic as the mean for the hedonic benefits was significantly higher than the mean for the utilitarian product benefits ($M_{utilglasses}$=4.09; $M_{hedoglasses}$=5.28; t=-4.935, df=34, p=0.000). The Intelligent Oven was classified as hybrid as the difference between hedonic and utilitarian perceived benefits was insignificant ($M_{utiloven}$=5.20; $M_{hedooven}$=4.97; t=0.692, df=36, p=0.493).

Stimuli development

18 stimuli were developed, 6 for each product. All the adverts featured the brand name, a picture of the product and a list of features. Moreover, to construct the verbal analogy condition, a picture of the product was placed at the top of the advert, followed by a verbal description of the product, starting with an analogy using words such as "The E-2000 is like a cinema projector". For all products, two additional references to the base were made to stimulate analogical transfer in the text (e.g. for the Video Glasses: "gives the impression of watching videos projected on a cinema screen" and "similar to a cinema projection"). The verbal mental simulation was identical except for changes in wording to stimulate mental simulation instead of analogical transfer. Mental simulation using words was stimulated using instructions to imagine and concrete words (Babin and Burns, 1992). The first sentence used instructions to imagine: "Imagine yourself using the E-2000". For all three products, two additional elements were used to stimulate imagery, using concrete words ("Movies from your last ski trip? Last concert?") and instructions to imagine ("Just imagine…"). Furthermore, while in the analogy condition the consumer was referred to as "the owner", in the mental simulation the consumer is presented in the second person (e.g. "you") in order to stimulate imagery in the mental simulation condition and limit the amount of imagery used in the analogy condition (Escalas and Luce, 2003). The verbal no analogy/no mental simulation was identical to the previous two conditions, except that no analogy and no mental simulation were included. To construct the visual analogy condition, a picture of the RNP was presented next to a picture of the base. The visual mental simulation had a visual scenario of product use. The visual no analogy/no mental simulation was identical to the previous two conditions, except that no visual analogy and no visual mental simulation were included. The pictures used in the visual conditions were extracted from product websites (http://www.tmio.com/, http://www.logitech.com/, http://www.agence-revolutions.com/orange_lunettes_video_mobile_revolutions.html, All accessed 17/ 07/ 2011)

Second set of pre-tests

A panel of 10 marketing expert judges was interviewed to ascertain the validity of the words vs. pictures manipulation. First, each judge was shown a picture of the base domains (e.g. cook, cinema projection, and secretary). 100% agreements were reached

across judges, indicating that the pictures of the base domains were easily identifiable and were viewed positively. Second, the judges were asked to make suggestions to improve the similarity between the messages conveyed in words vs. pictures. After modification of the stimuli according to these suggestions, the sample was asked to rate whether the word condition conveyed the same message as the pictorial one, using a 3-item scale. The results indicate that the similarity of the message conveyed in the mental simulation conditions (M.video glasses=5.9; M.digipen=5.5; M.intelligent oven=5.6, $p>0.05$) and in the analogy conditions (M.video glasses=5.1; M.digipen=4.9; M.intelligent oven=5.0, $p>0.05$) was rated highly. The difference across conditions did not reach significance. 18 stimuli were developed. 6 of these are presented in Exhibit 5 at: http://www.wix.com/stephaniefeiereisen1/stephaniefeiereisen#!additional-material-jpim-article.

Measures

Product comprehension (adapted from Moreau, Markman, and Lehmann, 2001 and Hoeffler, 2003) was captured by a 6-item scale ($\alpha=0.911$). Participants were asked to what extent they understood how the product worked/ thought they would be able to use the product/ understood the features/ benefits of the product. They were also asked to what extent they thought the product description was easy to understand/ straightforward (7-point scales). Product attitude was measured by a 4-item scale. Respondents were asked whether their attitude to the product was good/bad, favorable/unfavorable, like/dislike, positive/negative ($\alpha=0.972$).

Results and Analysis

Descriptive statistics for product comprehension and attitude to the product are presented in Tables 1 and 2, and a summary of the results of the ANOVAs is presented in Table 3.

Place Tables 1, 2 and 3 here

Hypotheses 1a, 1b and 1c

The 3 (framing strategy) x 2 (presentation format) x 3 (product type) repeated-measures ANOVA revealed a significant interaction effect between presentation format and framing strategy, $F(2, 1296) = 34.592$, $p<0.001$, partial $\eta^2=0.051$.

As alternative presentation formats and framing strategies are nested within each product, 2 (presentation format) x 3 (framing strategy) between-subjects ANOVAs were conducted the three products with product comprehension as the outcome variable.
For the Digipen (utilitarian product), the main effects of framing strategy [$F(2, 715) = 34.824$, $p<0.001$, partial $\eta^2=0.089$] and presentation format [$F(1, 715) = 275.856$, $p<0.001$, partial $\eta^2=0.278$] were significant. The interaction effect of framing strategy and

presentation format [F (2, 715) =24.533, p<0.001, partial η^2=0.064] also reached significance. The use of words created a higher level of product comprehension than pictures in the analogy condition ($M_{visual\ analogy}$=3.01 vs. $M_{verbal\ analogy}$=5.21; M_{diff}= -2.198, p<0.001, F (1, 715) =169.515, p<0.001). The same pattern was observed in the no analogy/ no mental simulation condition ($M_{visual\ none}$=2.69 vs. $M_{verbal\ none}$=4.76; M_{diff}= -2.069, p<0.001, F (1, 715) =131.291, p<0.001). Hypothesis 1a is supported.
For the Video Glasses (hedonic product), the main effects of framing strategy [F (2, 740) =24.271, p<0.001, partial η^2=0.062] and presentation format [F (1, 740) =21.464, p<0.001, partial η^2=0.028] were significant. The interaction effect of framing strategy and presentation format [F (2, 740) =21.516, p<0.001, partial η^2=0.055] also reached significance. The use of words created a higher level of product comprehension than the use of pictures in the analogy condition ($M_{visual\ analogy}$=3.00 vs. $M_{verbal\ analogy}$=4.38; M_{diff}= -1.381, p<0.001, F (1, 740) =79.034, p<0.001). In the no analogy/ no mental simulation condition the use of words was only marginally superior to the use of pictures ($M_{visual\ none}$=4.33 vs. $M_{verbal\ none}$=4.56; M_{diff}= -0.233, p>0.05, F (1, 740) =1.619, p>0.05). Hypothesis 1b is supported.

For the Intelligent Oven (hybrid product), the main effects of framing strategy [F (2, 742) =10.014, p<0.001, partial η^2=0.026] and presentation format [F (1, 742) =70.333, p<0.001, partial η^2=0.087] were significant. However, the interaction effect of framing strategy and presentation format was not significant [F (2, 742) =0.941, p>0.05, partial η^2=0.003]. The use of words yielded a higher product comprehension than the use of pictures in the analogy condition ($M_{visual\ analogy}$=3.46 vs. $M_{verbal\ analogy}$= 4.39; M_{diff}= -0.927, p<0.001, F (1, 742) =22.799, p<0.001). The same pattern was observed in the no analogy/no mental simulation condition ($M_{visual\ none}$=4.01 vs. $M_{verbal\ none}$=4.92; M_{diff}= -0.909, p<0.001, F (1, 742) =32.615, p<0.001). Hypothesis 1c is supported.

Hypotheses 2a, 2b and 2c

A 3 within-subjects (framing strategy: mental simulation vs. analogy vs. no analogy/ no mental simulation) x 2 between-subjects (presentation format: visual vs. verbal) x 3 between-subjects (product type: utilitarian vs. hedonic vs. hybrid) repeated-measures ANOVA was conducted with attitude to the product as the dependent variable. There was a significant interaction effect between presentation format and framing strategy, F (2, 1276) =8.247, p<0.001, partial η^2=0.013. 2 (presentation format) x 3 (framing strategy) between-subjects ANOVAs were conducted for each of the three products with attitude to the product as the outcome variable.

For the Digipen, the main effects of framing strategy [F (2, 726) =13.899, p<0.001, partial η^2=0.037] and presentation format [F (1, 726) =40.318, p<0.001, partial η^2=0.053] were significant. The interaction effect of framing strategy and presentation format [F (2, 726) =4.002, p<0.05, partial η^2=0.011] was also significant. The use of words created a more positive product attitude than the use of pictures in the analogy condition ($M_{visual\ analogy}$=3.58 vs. $M_{verbal\ analogy}$=4.77; M_{diff}= -1.194, p<0.001, F (1, 726) =32.053, p<0.001). The same pattern emerged in the no analogy/no mental simulation condition

(M.visual none=3.48 vs. M.verbal none=4.27; M.diff= -0.786, p<0.001, F (1, 726) =12.452, p<0.001). Hypothesis 2a is supported.

For the Video Glasses, the main effects of framing strategy [F (2, 736) =8.382, p<0.001, partial η^2=0.022] and presentation format [F (1, 736) =21.424, p<0.001, partial η^2=0.028] were significant. The interaction effect of framing strategy and presentation format [F (2, 736) =13.676, p<0.001, partial η^2=0.036] was also significant. In the analogy condition, there was no significant difference between the use of words and the use of pictures (M.visual analogy=3.61 vs. M.verbal analogy=3.87; M.diff=-0.259, p=0.159; F (1, 736) =1.992, p=0.159). The use of pictures created a more positive product attitude than the use of words in the no analogy/ no mental simulation condition (M.visual none=4.66 vs. M.verbal none=3.91; M.diff= 0.750, p<0.001, F (1, 736) =11.968, p<0.001). Hypothesis 2b is rejected, as the mean difference did not reach significance.

For the Intelligent Oven, the main effect of framing strategy [F (2, 735) =11.178, p<0.001, partial η^2=0.030] was significant while the main effect of presentation format was not [F (1, 735) =0.649, p>0.05, partial η^2=0.001]. The interaction effect of framing strategy and presentation format was not significant [F (2, 735) =0.002, p>0.05, partial η^2=0.000]. There was no significant difference in product attitude between the use of words and the use of pictures in the analogy condition (M.visual analogy=3.19 vs. M.verbal analogy= 3.29; M.diff= -0.104, p=0.686, F (1, 735) =0.163, p=0.686). There was also no significant differences between words and pictures in the no analogy/ no mental simulation condition (M.visual none=3.97 vs. M.verbal none=4.08; M.diff= -0.115, p=0.583, F (1, 735) =0.302, p=0.583). Hypothesis 2c is rejected.

Hypotheses 3a and 3b

For product comprehension and for the Digipen (utilitarian), the use of words created a higher product comprehension than the use of pictures in the mental simulation condition (M.visual mental simulation=4.39 vs. M.verbal mental simulation=5.08; M.diff= -0.688, p<0.001, F (1, 715) =16.960, p<0.001). Therefore, hypothesis 3a is supported. For the video glasses (hedonic), in the mental simulation condition, the use of pictures created a marginally higher product comprehension than words, although the difference did not reach significance (M.visual mental simulation=4.44 vs. M.verbal mental simulation=4.28; M.diff=0.156, p>0.05; F (1, 740)=0.591, p>0.05). Hypothesis 3b is statistically rejected.

Hypotheses 4a and 4b

For attitude to the product and for the Digipen, the difference between the use of words and pictures was only marginal in the mental simulation condition (M.visual mental simulation=4.48 vs. M.verbal mental simulation=4.84; M.diff= -0.362, p=0.077, F (1, 726) =3.127, p=0.077). Therefore, hypothesis 4a is marginally rejected, as the pattern of results is as expected and the p-value is close to significance (p=0.077).

For the Video Glasses, the use of pictures created a more positive product attitude than the use of words in the mental simulation condition ($M_{visual\ mental\ simulation}$=4.80 vs. $M_{verbal\ mental\ simulation}$=3.56; M_{diff}= 1.241, $p<0.001$, $F(1, 736) = 25.863$, $p<0.001$). Therefore, hypothesis 4b is supported.

The mean values for product comprehension are presented for the utilitarian product in Figure 2 and for the hedonic product in Figure 3.

Place Figures 2 and 3 here

The mean values for attitude to the product are illustrated for the utilitarian and hedonic product in Figure 4 and Figure 5 respectively.

Place Figures 4 and 5 here

Hypotheses 5a and 5b

For the Intelligent Oven (hybrid product), the use of words yielded a higher product comprehension than the use of pictures in the mental simulation condition ($M_{visual\ mental\ simulation}$=4.05 vs. $M_{verbal\ mental\ simulation}$=4.69; M_{diff}= -0.644, $p<0.001$; $F(1, 742) = 16.976$, $p<0.001$). Hypothesis 5a predicted that when the framing strategy is a mental simulation, the use of words would trigger similar levels of product comprehension as the use of pictures for a hybrid product. Therefore, hypothesis 5a is rejected as the use of words triggered a significantly higher product comprehension than pictures in the mental simulation condition. There was no significant difference in product attitude between the use of words and the use of pictures in the mental simulation condition ($M_{visual\ mental\ simulation}$=3.65 vs. $M_{verbal\ mental\ simulation}$=3.74; M_{diff}= -0.095, $p=0.643$; $F(1, 735) = 0.215$, $p=0.643$). Hypothesis 5b which predicted that when the framing strategy is a mental simulation, the use of words would trigger similar levels of attitude to the product as the use of pictures for a hybrid product is therefore supported.

The means for each combination of framing strategy and presentation format are illustrated for the hybrid product in Figure 6 for product comprehension and for attitude to the product in Figure 7.

Place Figures 6 and 7

General Discussion

Contributions

This research examined whether the effects of conveying alternative framing strategies (i.e. mental simulations vs. analogies) using words vs. pictures on individual responses to

RNPs (i.e. product comprehension and attitude to the product), depend on RNP type (i.e. utilitarian vs. hedonic vs. hybrid). The results (Table 4) show that the effectiveness of alternative combinations of framing strategies and presentation formats in enhancing individual responses to RNPs depends on RNP type.

Place Table 4 here

The hypotheses which predicted that words would be more successful in increasing product comprehension than pictures for analogies (H1a, b and c) were supported across all products. This finding is in line with rhetorical theory (Messaris, 1997) which states that pictures are inherently characterized by their lack of explicit means to identify how they relate to each other. This characteristic acts as a hindrance when pictures are used to convey analogies, which, by definition, are only guesses (Gentner, 1989). The low level of product comprehension derived from visual analogies across the three products is grounded in the theoretical precepts of the resource-matching perspective (Anand and Sternthal, 1990). This perspective states that the processing of rhetorical works will be optimized when one's available resources match resource demand. In the present study, the stimulus' resource demand must have been greater than the individual's available resources, hence a detrimental effect on processing.

It was also predicted that, across all products, words would be more successful in enhancing attitude to the product than pictures when the framing strategy is an analogy (H2a, b, and c). However this was only verified for the utilitarian product. The mean differences did not reach significance for the hybrid or for the hedonic product. A closer look at the mean values shows that for the hybrid and the hedonic product, both the verbal and the visual analogy triggered low levels of attitude. Congruity theory may help shed light on the unexpected contrast in results (Johar and Sirgy, 1991). Specifically, the superiority of verbal analogies over visual analogies in enhancing attitude may only be achieved when a congruity exists between presentation format, i.e. words, and product type, i.e. utilitarian. For other types of RNPs, both verbal and visual analogies should be ineffective in enhancing attitudes. This research brings together two separate streams of research: analogical learning for RNPs (Feiereisen, Wong, and Broderick, 2008) and advertising rhetoric (McQuarrie and Phillips, 2005) and closes a gap in the literature by comparing analogies for RNPs presented in words or in pictures. The findings suggest that visual analogies are not the best way to convey the benefits of RNPs.

As for the hypotheses on mental simulation, the use of words did trigger a higher product comprehension than the use of pictures for a utilitarian product, as hypothesized in H3a. Thus, words are a more suitable presentation format to increase comprehension of a mental simulation for a utilitarian product than pictures. However, contrary to what was hypothesized in H3b, the visual mental simulation did not trigger a higher product comprehension than the verbal mental simulation for a hedonic product. Moreover, the verbal mental simulation did not trigger a more positive attitude to the product than the visual mental simulation for the utilitarian product (contrary to H4a), whereas the visual mental simulation did trigger a more positive attitude to the product than the use of words for a hedonic product (in line with H4b). This last finding contributes to existing research

on RNPs, as prior work has focused solely on the use of words to convey mental simulation and has not examined the use of pictures. The findings suggest that visual mental simulations are worthy of investigation as they are successful in enhancing responses to RNPs under certain conditions, such as when the RNP is hedonic.

Taken together, the findings for mental simulations show a clear pattern: for a utilitarian product, the positive effect of the congruity between presentation format i.e. words and product type only occurs when the dependent variable is product comprehension, whereas for a hedonic product, the positive impact of the congruity between presentation format i.e. pictures and product type only takes place for attitude to the product. These findings should be considered in light of the conceptualization of the dependent variables: comprehension and attitude. Comprehension is defined as the generation of meanings by a particular individual through the activation of mental concepts related to the message and processing context, and is therefore a cognitive response (Mick, 1992). Contrarily, attitude has a cognitive, but also an affective component (Ajzen and Fishbein, 2005). The results show that for mental simulations, the congruity between utilitarian product and words enhances cognitive responses i.e. product comprehension, whereas the congruity between hedonic product and pictures enhances responses that include an affective component i.e. attitude to the product. This suggests the existence of a triple congruity between presentation format, product type, and dependent variable.

Finally, for the hybrid product, the verbal mental simulation triggered a significantly higher product comprehension than the visual mental simulation. This is an unexpected finding, as it was hypothesized in H5a that there would be no differences in comprehension between the two conditions. As predicted in H5b, there was no significant difference in attitude between the visual and the verbal mental simulation for the hybrid product. These findings contribute to the understanding of consumer responses to hybrid products which are widespread in the marketplace but have been given very little attention in the literature. The results show that the utilitarian and the hybrid RNP display a similar pattern of results when the framing strategy used is a mental simulation. The utilitarian dimension may therefore act as the driver of consumer responses to RNPs of a hybrid type under these conditions. Overall, the present research contributes to the stream of literature on hedonic and utilitarian products (Gill, 2008) by demonstrating that the effectiveness of communication strategies depends on product type, i.e. utilitarian vs. hedonic vs. hybrid, hence the need to incorporate product type into experimental settings.

Managerial Implications

Based on the study's findings, better practice in the launch of RNPs would involve aligning presentation format and message framing strategies to RNP type. In particular, the results of this research demonstrate that hedonic RNPs such as the Video Glasses should be conveyed using visual mental simulations to enhance responses. Managers could use a range of communication methods to help consumers visualize product use for the Video Glasses, via TV, print, or Web advertisements. A visual mental simulation for the video glasses could show the step-by-step process of use for the video glasses.

However, this approach is less likely to work with a more utilitarian RNP such as the Digipen. Marketing communications for such products should use words to communicate the product benefits, as potential consumers are more convinced by this format when evaluating a product that is highly functional. For example, the benefits of the digital pen developed by Logitech should be best conveyed using print advertising or web-based written advertisements asking consumers to imagine using the product. Well-chosen written analogies would also be effective. Finally, hybrid products such as the intelligent oven should be conveyed using verbal mental simulation in order to enhance both comprehension and attitude. Journalists have previously used verbal mental simulations to convey the benefits of the intelligent oven developed by TMIO: 'Imagine being able to leave a meal in the fridge for the day but then send a command over the internet to cook it so that it is ready when you get home' (Hermida, 2003). This study's findings suggest that companies would also benefit from the use of verbal mental simulations in their advertising campaigns for hybrid RNPs.

Furthermore, the present research demonstrates that visual analogies are inappropriate to convey the benefits of RNPs, regardless of the nature of the product. Marketers should consider using visual analogies for incrementally new products but not for RNPs as the implicitness of the analogical rhetorical device (McQuarrie and Phillips, 2005), combined with pictorials which are by definition open to multiple interpretations, is inappropriate to convey the benefits of truly novel products.

Limitations and Directions for Future Research

This research produces useful findings for the area of consumer responses to RNPs, yet it is not without limitations. The first limitation is inherent in experimental studies and mainly relates to generalization of the findings beyond the study sample. Differences related to consumer demographics may exist, although given the large sample size this limitation is not as severe as it could be in a different research context. Moreover, stimuli used did not consist only of words or only of pictures. Specifically, the verbal stimuli contained a picture of the product and the visual stimuli contained a short list of product attributes. This decision was made to increase external validity as real-world advertisements are seldom purely visual or purely verbal (McQuarrie and Phillips, 2005).

An opportunity for future research lies in a better understanding of how individuals can use different visual images to learn about and form preferences for a new product. Previous findings suggest that the use of others-related visualization produces more positive evaluations for a RNP than the use of self-related visualization (Dahl and Hoeffler, 2004). However, RNP type may have a moderating effect on this relationship, with others-related mental simulations being more effective for utilitarian RNPs and self-related mental simulations more appropriate for hedonic RNPs. This is based on the argument that persuasion for hedonic products operates via self-congruity, whereas persuasion for utilitarian products operates via functional congruity (Johar and Sirgy, 1991). For example, conveying the benefits of 3D video glasses using self-related mental simulation may activate congruent images for consumers who think of themselves as

innovative or tech-savvy. Therefore, an intriguing opportunity for future research lies in examining experimentally whether product type explains the effect of self-related vs. others-related mental simulations on evaluations for a RNP. Future research should also examine strategies to improve the effectiveness of analogies as a learning and persuasive tool for new products. A promising possibility would be to further examine the use of experiential analogies (Goode, Dahl, and Moreau, 2010) for hedonic RNPs. Because emotions are central to the experience of using a hedonic RNP, experiential analogies may significantly enhance product evaluations compared to rational analogies by motivating individuals to consider their own subjective experience as a basis for understanding the emotions that may be experienced when using the RNP.

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Figures and Tables

Figure 1 Conceptual Framework

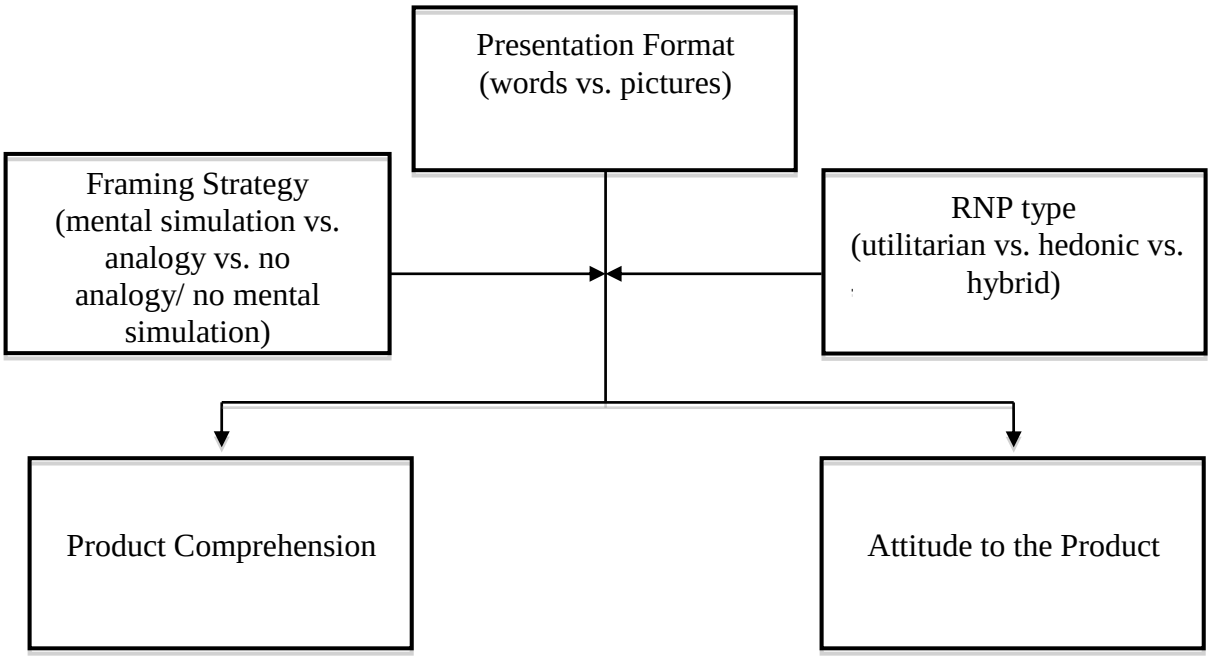

Figure 2 Product Comprehension for each presentation format/ framing strategy combination (Utilitarian Product: Digipen)

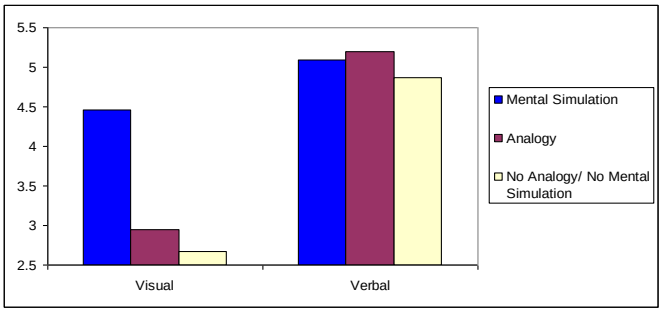

Figure 3 Product Comprehension for each presentation format/ framing strategy combination (Hedonic Product: Video glasses)

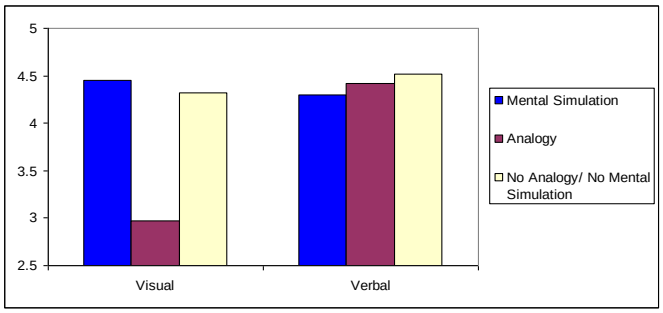

Figure 4 Product Attitude for each presentation format/ framing strategy combination (Utilitarian product: Digipen)

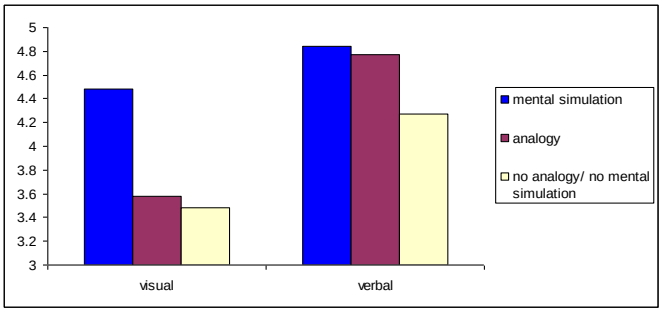

Figure 5 Product Attitude for each presentation format/ framing strategy combination (Hedonic Product: Video glasses)

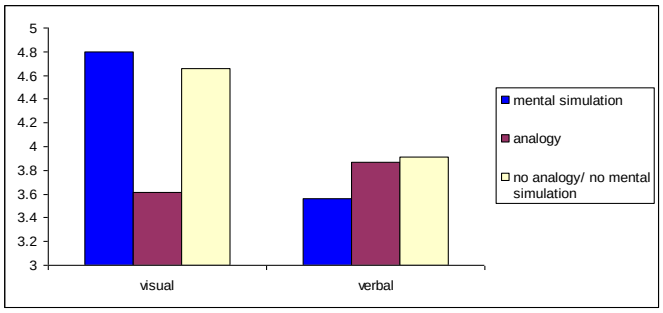

Figure 6 Product Comprehension for each presentation format/ framing strategy combination (Hybrid Product: Intelligent oven)

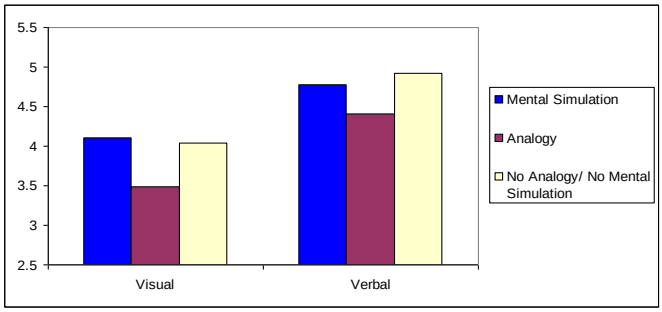

Figure 7 Product Attitude for each presentation format/ framing strategy combination (Hybrid Product: Intelligent oven)

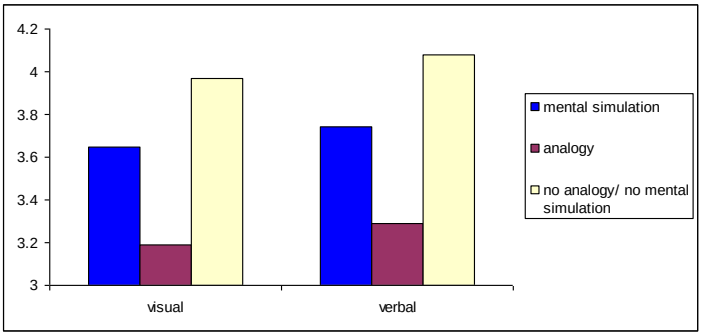

Table 1 Descriptive Statistics: Product Comprehension

	Mental Simulation	Visual Analogy	No analogy/ no mental simulation	Mental Simulation	Verbal Analogy	No analogy/ no mental simulation
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
Digipen (Utilitarian)	4.39 (1.54)	3.01 (1.72)	2.69 (1.30)	5.08 (1.05)	5.21 (1.15)	4.76 (1.17)
Video Glasses (Hedonic)	4.44 (1.33)	3.00 (1.35)	4.33 (1.57)	4.28 (1.40)	4.38 (1.21)	4.56 (1.48)
Intelligent Oven (Hybrid)	4.05 (1.46)	3.46 (1.50)	4.01 (1.43)	4.69 (1.12)	4.39 (1.30)	4.92 (1.13)

Table 2 Descriptive Statistics: Product Attitude

	Mental Simulation	Visual Analogy	No analogy/ no mental simulation	Mental Simulation	Verbal Analogy	No analogy/ no mental simulation
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
Digipen (Utilitarian)	4.48 (1.66)	3.58 (1.75)	3.48 (1.40)	4.84 (1.74)	4.77 (1.58)	4.27 (1.60)
Video Glasses (Hedonic)	4.80 (1.53)	3.61 (1.49)	4.66 (1.63)	3.56 (1.68)	3.87 (1.60)	3.91 (1.81)
Intelligent Oven (Hybrid)	3.65 (1.56)	3.19 (1.60)	3.97 (1.64)	3.74 (1.63)	3.29 (1.93)	4.08 (1.85)

Table 3 ANOVA Results

	Product Comprehension			Product Attitude		
	F	**P**	**Partial η²**	**F**	**p**	**Partial η²**
Presentation Format x Framing Strategy x Product Type						
Presentation Format x Framing Strategy	34.592	p<0.001	0.051	8.247	p<0.001	0.013
Utilitarian product						
Framing Strategy	34.824	p<0.001	0.089	13.899	p<0.001	0.037
Presentation Format	275.856	p<0.001	0.278	40.318	p<0.001	0.053
Framing Strategy x Presentation Format	24.533	p<0.001	0.064	4.002	p<0.05	0.011
Hedonic product						
Framing Strategy	24.271	p<0.001	0.062	8.382	p<0.001	0.022
Presentation Format	21.464	p<0.001	0.028	21.424	p<0.001	0.028
Framing Strategy x Presentation Format	21.516	p<0.001	0.055	13.676	p<0.001	0.036
Hybrid product						
Framing Strategy	10.014	p<0.001	0.026	11.178	p<0.001	0.030
Presentation Format	70.333	p<0.001	0.087	0.649	p>0.05	0.001
Framing Strategy x Presentation Format	0.941	p>0.05	0.003	0.002	p>0.05	0.000

Table 4 Summary of the most effective combinations of learning strategies and presentation formats per product type and per outcome

	Digipen (utilitarian)	Intelligent oven (hybrid)	Video glasses (hedonic)
Product Comprehension	**Verbal mental simulation and verbal analogy**	**Verbal mental simulation**	**Visual mental simulation, verbal mental simulation or verbal analogy**
Attitude to the product	**Verbal mental simulation and verbal analogy followed by visual mental simulation**	**Verbal and visual mental simulations**	**Visual mental simulation**