

This item is the archived peer-reviewed author-version of:

How product representation shapes virtual experiences and re-patronage intentions : the role of mental imagery processing and experiential value

Reference:

Overmars Suzanne, Poels Karolien.- How product representation shapes virtual experiences and re-patronage intentions : the role of mental imagery processing and experiential value

The international review of retail, distribution and consumer research - ISSN 1466-4402 - (2014), p. 1-24

Full text (Publishers DOI): <http://dx.doi.org/doi:10.1080/09593969.2014.988279>

To cite this reference: <http://hdl.handle.net/10067/1223670151162165141>

**How Product Representation Shapes Virtual Experiences and Re-
patronage Intentions: The Role of Mental Imagery Processing and
Experiential Value**

Suzanne Overmars (corresponding author)

University of Antwerp | Dept. Communication Sciences
City campus | Sint-Jacobstraat 2 | 2000 Antwerp | Belgium
Email: Suzanne.Overmars@uantwerpen.be

Phone. +32 (0)3 265 53 80

Mobile phone. +32 (0)4 864 59 64 7

Karolien Poels

University of Antwerp | Dept. Communication Sciences
City campus | Sint-Jacobstraat 2 | 2000 Antwerp | Belgium

Email: Karolien.Poels@uantwerpen.be

Phone: +32 (0)3 265 55 87

Abstract

Despite the lack of physical contact, innovative technologies in online stores are able to engender compelling virtual product experiences. The primary objective of this study is to clarify the *mechanisms* through which these virtual product experiences occur. The study proposes and tests a model in which mental imagery processing and consumers' perceptions of experiential value function as potential mechanisms through which virtual experiences in online stores are established, thereby determining re-patronage intention. The model was tested in an experimental study investigating two versions of a fast fashion online store that varied in terms of product representations: dynamic (i.e., a mix-and-match feature allowing the creation of visual images of apparel combinations) and static (i.e., rigid pictures). A sample of 660 valid cases involving individuals of Generation Y (born in 1977-1994) was obtained. The structural equation modelling technique was used to analyze the proposed research model. The results indicate that the dynamic mix-and-match technology arouses more mental images of physical product interaction than do static pictures. Moreover, mental imagery processing can be considered an important underlying source of online experiential value, which consumers subsequently exploit with repeated visits to the online store. By introducing psychological constructs such as mental imagery and perceived value, this study augments prior research on online product experiences by proposing and validating the underlying mechanisms through which the way of representing products affect consumer responses. Finally, both theoretical and practical contributions of the findings are discussed, as well as directions for further research.

Keywords: e-retailing, mental imagery, virtual product experience, experiential value, fast fashion, generation Y

1. Introduction

Online stores are limited in the sensory information they can offer. In a virtual environment, people simply cannot physically examine products before purchase, and they must rely on information provided by the online retailer (a source that may have a vested interest). In the same way, the lack of direct experiential contact with the product may decrease consumer enjoyment, which has proven a vital aspect of the shopping experience (Childers et al. 2001). Nevertheless, (sensory) product information has been recognized as one of the most important determinants of successful e-retailing performance (Ramanathan 2010; Dennis, Jayawardhena, and Papamatthaiou 2010). To alleviate these problems, online retailers are continuously exploring new opportunities for integrating innovative technologies into online stores in order to showcase their products. For example, the literature provides evidence that three-dimensional (3D) visualizations of products are better than static images in enhancing consumers' product understanding and mitigating perceived risk (Jiang and Benbasat 2007; Park, Stoel, and Lennon 2008). Other studies show that interactive and rotating product representations have a positive effect on consumers' sense of presence in remote environments (Klein 2003; Li, Daugherty, and Biocca 2003; Fiore, Kim, and Lee 2005). Despite these previous endeavors, very little research has examined any integrated frameworks in which the *mechanism* through which virtual product experiences ease the constraints associated with consumers' lack of physical product examination in conjunction with the extent to which this mechanism *facilitates* a compelling shopping experience and *fosters* patronage intentions (e.g., repeated visits to the store).

This study therefore investigates two versions of an online store that varies in terms of product representation: dynamic (i.e., a mix-and-match feature allowing the creation of visual images of apparel combinations) and static (i.e., rigid pictures). The primary objective of this study is to test the potential role and impact of mental imagery processing (i.e., perceptual information accessed from memory) as one mechanism through which virtual product experiences are established. Along with the consequences of mental imagery for the process of value creation and ultimate consumer behavioral intentions.

This current study focusses on Generation Y (Gen Y) consumers and online retailing in the fast fashion industry. Gen Y members were born between 1977 to 1994 and are considered as the next promising generation. Business are struggling to find ways to capture a piece of the Gen Y market (Cui et al. 2003). These emerging adults with growing buying power demand value and desire an experience when shopping (online) and therefore deserve the attention of academics and marketers (Colucci and Scarpi 2013; Sullivan and Heitmeyer 2008). At the

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

same time, the fast fashion industry is thriving, partly thanks to Gen Y consumers who are a paradox; wanting cheap and chic (Sullivan, Kang, and Heitmeyer 2012). In the fast fashion industry designs move as quickly as possible from catwalk to store to capture current trends in the market at affordable prices (Zhenxiang and Lijie 2011). Statistics show an enormous space to explore for online fast fashion retailing (Zhenxiang and Lijie 2011). However, being able to communicate the latest style online through high qualified virtual representations might be essential to provide product distinction and further experiential value to capture and retain the attention of Gen Y consumers. This issue has not been adequately addressed in previous studies.

The paper is organized as follows. We start with a literature review on the three main constructs under study; mental imagery processing, image interactivity and value creation theory. Next, we introduce the model and corresponding hypotheses drawn from the literature review. Next, a description of the empirical study designed to address the research model follows, then we present the analyses and results. Finally, we summarize the study's conclusions, its limitations, and we suggest several opportunities for further research.

2. Review of theoretical foundations

2.1 Defining mental imagery processing

Research in the field of advertising (Babin and Burns 1997; Bone and Ellen 1992) has shown that when consumers perceive actual product experiences to be blocked (product representations are the only source of information), indirect product experiences (e.g., a picture of a car) arouse *mental imagery processing* (e.g., the picture might invite you to imagine yourself actually driving the car). Mental imagery occurs when perceptual information is accessed from memory, creating the experience of 'seeing with the mind's eye' and 'hearing with the mind's ear' (Kosslyn, Ganis, and Thompson 2001; MacInnis and Price 1987). In contrast, actual perception occurs when information is registered directly from the senses. Mental imagery thus enables individuals to experience a sensory stimulus in the absence of the true stimulus (Burns, Biswas, and Babin 1993). Studies in the field of neuroscience reveal considerable overlap between mental imagery and actual perceptual processes. In other words, imagining an action is comparable to carrying it out, as imagination activates at least some of the same brain areas (Anema et al. 2012; Lang 1979). According to mental imagery theory, individuals mentally

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

represent stimuli and actions based on what they have experienced in the past, combined with perceptual information available at that moment (Lee and Gretzel 2012). Mental imagery can be experienced in various sensory modalities. Mental images need not result merely from the exact recall of previously perceived stimuli or actions; they can also be created by combining and modifying stored perceptual information in novel ways (Kosslyn, Ganis, and Thompson 2001). For online stores, this could imply that consumers do not solely recall products experienced in the past. When provided with sufficient knowledge, consumers imagine products that they have never actually encountered by combining stored perceptual information in original ways (e.g., perceptual information of a previously perceived silk dress can be used to create mental images of a soft silk cushion). Nevertheless, the degree of mental imagery processing is strongly influenced by the ways in which products are represented in mediated environments (Schlosser 2003). Moreover, the format in which information is presented (in this study static vs. dynamic) could either encourage or discourage processing based on mental imagery (Childers, Heckler, and Houston 1986).

2.2 The potential role of image interactivity

In the context of online stores, when deprived of physical product examination, mental imagery could serve as a proxy for actual sensory experiences. A consumer may respond to the representation of a product by spontaneously generating clear and vivid mental images about potential product interaction in an imagined scenario—as if it is a real experience (Bone and Ellen 1992; Schlosser 2003). Recent studies report that virtual cues (e.g., high-resolution pictures, 3D interfaces) influence the level of imagery processing (Lee 2012; Lee and Gretzel 2012; Schlosser 2003). The present study focuses on *image interactivity technology* as a way of representing products. Steuer (1992, 84) defines interactivity as ‘the extent to which users can participate in modifying the form or content of a mediated environment in real time’. Image interactivity allows users to create and manipulate product images within a virtual environment. Image interactivity technology might thus provide consumers with information resembling direct experiential contact with products. Most online stores currently employ a simple form of image interactivity technology (Fiore, Jin, and Kim 2005). In most cases, this involves zoom functions that allow consumers to enlarge frontal views of individual products. However, online stores are now gradually starting to incorporate advanced image interactivity technology. For example, a major European apparel retailer has recently included a ‘mix-and-match’ image interactivity feature to represent the apparel in their online store. This feature supports the creation of visual images of apparel combinations, thereby enhancing the sensory

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

information about the interactions with the products, and the products with the body (Fiore, Jin, and Kim 2005). Kim and Forsythe (2008) found that online apparel shoppers use mix-and-match features to reduce product risks and increase enjoyment in online shopping. In a similar vein, Fiore, Jin and Kim (2005) illustrate that when a website's mix-and-match image interactivity feature produces a stimulating experience it affects feelings of pleasure and arousal, which, in turn, predict approach responses. Nevertheless, researchers have yet to investigate any integrated model of the consequences of various modes of representation for mental imagery processing and, more importantly, the consequences of mental imagery as an influential strategy for online shopping experiences and subsequent consumer judgments and behavior. Petrova and Cialdini (2008, 515) recommend that 'future research should shed more light on the processes through which imagery influences consumers' judgments and behavior.' This study therefore suggests one as yet unexplored possibility: the *process of value creation*. This suggestion is based on the evidence that interaction between the consumer and product is a vital source of value (Mathwick, Malhotra, and Rigdon 2001; Smith and Colgate 2007).

2.3 A value creation perspective

The construct of perceived value has been identified as one of the most significant factors in the success of organizations (Woodruff 1997; Gallarza, Gil-Saura, and Holbrook 2011). Obtaining value is a fundamental purchase goal for consumers. Therefore, value creation is important for gaining a competitive edge and an important indicator of repurchase intention (Parasuraman and Grewal 2000). According to Zeithaml (1988), value is what a consumer 'gets' (e.g., benefits) relative to what a consumer must 'give up' (e.g., costs or sacrifices). Creating added value (benefits outweigh the sacrifices) is particularly vital for retailers to obtain satisfied and loyal customers (Sweeney and Soutar 2001; Lindgreen and Wynstra 2005). However, value creation might be even more crucial for *online* retailers given that they are not bound to any physical place. Especially for fast fashion online stores, consumers can easily switch from one online store to another (cheaper store) in just one click (exceptionally low cost). Fast fashion online stores that solely focus on the most easily observable (and also the most straightforward to copy by competitors) store cues such as price, offer no point of differentiation and are therefore likely to foster additional store switching (Shukla and Babin 2013; Willems 2012; Zhenxiang and Lijie 2011). As such, finding ways to deliver superior value is a key with which fast fashion online retailers can distinguish themselves (in the eyes

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

of consumers) from others within the virtual marketplace or in comparison to traditional brick-and-mortar stores.

We believe that, both in the empirical research of value perceptions and in the management of e-retailing, there is a need of surpassing the utilitarian approaches such as the too simple tradeoff between quality and price and the limited perceived usefulness concept. To exemplify, most internet research to date establishes the value found in the extrinsic (i.e., utilitarian) benefits of online shopping. For example, Overby and Lee (2006) demonstrate that consumers shop online due to the convenience of comparing products, evaluating price/quality ratios, and saving time resources. Mathwick and colleagues (2001) suggest that online shopping is based on a small range of experiential value sources, primarily efficiency and affordability. Likewise, McGoldrick and Collins (2007) show that the experiential component is highly prominent when shopping in-store but is far less present when shopping online. In general, the majority of the studies conclude that consumers turn (or return) to online stores primarily for extrinsic reasons (e.g., price savings and convenience). In contrast, the current literature contains many assessments of the presence of hedonism online (Scarpi 2012). People repeatedly turn to the internet to seek pleasure, excitement, and gratification through such activities as playing virtual games, engaging in social media, or streaming music (Wu and Holsapple 2014). The search for captivating experiences to complement everyday life is very important, and it appears to be inextricably linked to the shopping experience in brick-and-mortar stores (Babin and Attaway 2000; Babin, Darden, and Griffin 1994; Sullivan, Kang, and Heitmeyer 2012; Colucci and Scarpi 2013). This might be especially true for Gen Y consumers, as this demographic cohort truly desires an enriching experience when shopping (Sullivan, Kang, and Heitmeyer 2012). Nevertheless, consumers who are looking for engaging experiences in online stores still encounter difficulties with finding shopping environments designed to appeal to hedonic sensation (Scarpi 2012). In this study we propose that advancements in the technology can blur the difference between virtual and physical retail environments. Focusing on the price, efficiency, or the functional utility provided might be too narrow to account for all of the value that online stores could provide nowadays (Willems 2012). Therefore, in this study we adopt the experiential perspective on the value construct, which proposes that value perceptions are not only affected by consumers' perceptions of price and quality but also by consumers' fantasies, feelings, and fun (Holbrook 1999; Mathwick, Malhotra, and Rigdon 2001). To examine experiential value based on Holbrook's typology, Mathwick and colleagues (2001) present the experiential value scale (EVS). This multi-dimensional scale reflects two underlying orthogonal spheres (1) extrinsic

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

versus intrinsic value and (2) active versus reactive value, hence measuring four dimensions of experiential value; aesthetics, playfulness, consumer return on investment and service excellence (see Figure 1).

<p style="text-align: center;">Intrinsic value</p> <p>is related to the shopping experience itself but not necessarily to a specific outcome (e.g. a purchase)</p>	<p>Playfulness</p> <p>comprises the intrinsic enjoyment that comes from participating in absorbing activities that take on an element of play</p>	<p>Aesthetics</p> <p>includes the consumer's reaction to the consonance and unity of an object, service, or retail environment</p>
<p style="text-align: center;">Extrinsic value</p> <p>the shopping experience can be appreciated because it helps the consumer to achieve some specific goal</p>	<p>Consumer return of investment</p> <p>refers to active investment in financial, temporal, behavioral, and psychological resources that could potentially yield positive returns</p>	<p>Service excellence</p> <p>reflects the consumer's perception that the store can deliver on its promises through demonstrated expertise and task-related performance throughout the entire process</p>
<p style="text-align: center;">Active value</p> <p>consumers may typically value the active collaboration between the consumer and retailer (consumers act on an object)</p>		<p style="text-align: center;">Reactive value</p> <p>consumers may value shopping experiences that enthrall them (an object acts on the consumer)</p>

Figure 1. Experiential value construct based on Holbrook (1999) and Mathwick et al. (2001)

The primary objective of this study is to clarify the *mechanism* through which virtual product experiences occur. The study involves defining and testing a model in which mental imagery and consumers' perceptions of experiential value function as potential mechanisms through which virtual experiences are established, thereby determining re-patronage intention. With this research objective in mind, four unique aspects of the current study differentiate it from previous studies.

First, this study employs Holbrook's (1999) comprehensive approach to the value construct. This conceptualization provides a higher level of gradation of the value types a consumer can experience in a retail store and is strongly anchored in an experiential

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

perspective on value, going beyond the dichotomous view that contrasts utilitarian and hedonic value.

Second, whereas the dominant focus in most in-store and online value creation studies is on the *consequences* of value perceptions, such as (retail) preference, purchase intention and loyalty (Overby and Lee 2006; Chang and Tseng 2013; Kim and Forsythe 2008; Gallarza and Gil Saura 2006). The focus of this study is rather on the *antecedent* side of the construct.

Third, proposing mental imagery as antecedent is motivated by the considerable explanatory potential of this construct as is evidenced by many researchers (e.g., Babin and Burns 1998; MacInnis and Price 1987; Thompson and Hamilton 2006; Oliver, Robertson, and Mitchell 1993; Petrova and Cialdini 2008). Mental imagery has proven to fit several contexts, such as consumer problem framing, probability assessment, advertisement effectiveness, consumption experiences, consumer satisfaction, and so forth. However, researchers are only just starting to explore mental imagery in the field of online retailing and much is still to be examined (Schlosser 2003; Lee and Gretzel 2012).

Fourth, the current understanding of online shopping practices can be enhanced by incorporating the theories of mental imagery processing and experiential value under a single conceptual umbrella, thus proposing an integrated model of virtual product experiences.

3. Proposed research model and hypotheses

3.1 Virtual product experience affecting mental imagery processing

In virtual environments, the inability to interact physically with products makes mental imagery an important tool for attaining some of the stimulation that consumers normally derive from physical product interaction (MacInnis and Price 1987). For mental imagery processing to occur, consumers need sufficient cues that provide knowledge and concretization (Petrova and Cialdini 2008). Dynamic mix-and-match technology is likely to enhance the vividness of such processing by providing concrete cues that encourage consumers to imagine a product trial. Most often used in the context of clothing, this technology allows online shoppers to interact with clothing articles through such actions as simulating the appearance of apparel product combinations on virtual bodies, altering the appearance of products (e.g., tops tucked into bottoms), and adjusting colors and viewing angles, just as they would do in a fitting room. Schlosser (2003, 185) uses the term ‘as-if responding’ to describe the continuous change in graphics in response to user behaviors: ‘responding as if the events were occurring in the physical world.’ Dynamic mix-and-match

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

technology is therefore likely to provide precise, vivid, accessible and realistic mental images of actual product interaction. Because dynamic product representations provide richer cues with which to generate mental imagery than do static representations (in which the shift in graphic representations is less concrete and less vivid), the first hypothesis is as follows:

H1 In an online store, dynamic product representations stimulate mental imagery processing more than static product representations do.

3.2 Mental Imagery Processing Affecting the Process of Value Creation

Value perceptions imply an interaction between a consumer and a product or service, e.g., shopping trips are evaluated on the merits of the goods or services that are acquired and on numerous intangible and emotional costs/benefits that accompany product interactions (Sánchez-Fernández and Iniesta-Bonillo 2007). In other words, interactions involving both the direct usage and the distant appreciation of products provide the basis for creating experiential value for the consumers involved (Mathwick, Malhotra, and Rigdon 2001; Oliver, Robertson, and Mitchell 1993). When product interactions are needed but blocked (as is frequently the case when consumers shop online), mental imagery may be used to obtain an approximate answer. As mentioned above, mental imagery shares the same neural mechanism with actual actions and helps in the construction of detailed product-trial scenarios. Mental imagery processing is therefore likely to be salient in the process of creating value online, given that it contributes to mental representations of consumer–product interactions.

The following considerations argue for the importance of the experiential value construct as a powerful outcome of mental imagery. First, consumers could proactively choose to use mental imagery to experience the immediate personal gratification of the consumption situation itself (Holbrook and Hirschman 1982; MacInnis and Price 1987). When the mix-and-match feature provides vivid cues to imagine trying on an outfit in a fitting room, and if these mental images are used as a proxy for actual experience, one function of mental imagery is likely to involve the inference of the intrinsic benefits of the imagined scenario. Calling mental images of product trial to mind may emphasize collaboration between consumers and retailers. Consumers might derive considerable enjoyment from being actively involved in the shopping experience by combining different apparel items to create novel looks (playfulness). Consumers might also appreciate the imagined experience aesthetically—purely for its own sake (i.e., being entertained [aesthetics])—albeit in a more passive way (Holbrook and

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

Hirschman 1982). Furthermore, when product interactions are blocked, consumers might choose to use mental imagery as part of a goal-fulfilling/problem-solving approach (extrinsic value) to product-purchase decisions. Mental simulation (e.g., imagining wearing a specific jacket) helps consumers to determine whether a product will be useful in attaining a specific end-goal (e.g., the jacket will keep me warm) considering the time and money spent and, therefore, perceive consumer return on investment (Smith, Mitchell, and Meyer 1982). A final related function of mental imagery is that it provides additional information needed in order to assess service excellence—a store's ability to deliver on its promises through demonstrated expertise and task-related performance (Zeithaml 1988). An online store that offers a feature that arouses mental images of product trials might be able to respond promptly and capably to consumer needs throughout the entire shopping process (Oliver 1999). In other words, arousing mental imagery could be perceived as an excellent service that compensates for shortcomings in other areas (e.g., product demonstrations or product samples). In conclusion, consumers are likely to use mental imagery to infer the four different dimensions of experiential value simultaneously. This suggests the following hypotheses:

- H2a** Mental imagery processing is positively associated with perceived aesthetics.
- H2b** Mental imagery processing is positively associated with perceived playfulness.
- H2c** Mental imagery processing is positively associated with perceived consumer return on investment.
- H2d** Mental imagery processing is positively associated with perceived service excellence.

3.3 Perceived value affecting re-patronage intention

Mathwick and colleagues (2001) report that shopping-based experiential value perceptions are positively associated with retail preference. In a similar vein, Sullivan and colleagues (2012) found that perceived experiential value directly influences retail patronage in an in-store context. Additional studies also conclude that consumers' responses toward the online store (attitude, purchase intentions, willingness to patronize) depends on consumers' perceptions of various sources of value attached to the shopping experience (Chang and Tseng 2013; Fiore, Kim, and Lee 2005). In efforts to mitigate store switching, the re-patronage intentions of consumers is of concern, as these intentions reflect a store's ability to engage consumers for longer periods in the future, thus differentiating itself from competitors. We propose that online shopping activities might be based on a broader range of value sources, given that advancements in the technology (i.e., mix-and-match feature) more closely resemble the actual experience than static pictures and therefore could blur the difference

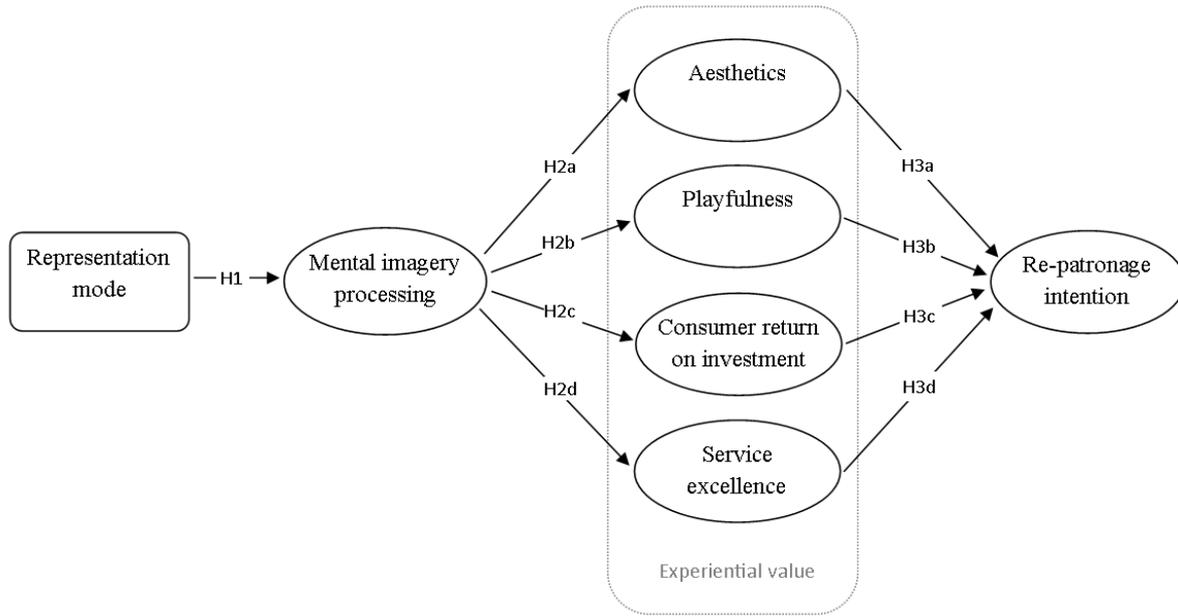
HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

between virtual and real product experiences. Online stores that include advanced image interactivity arousing mental imagery are therefore likely to increase the ability to entertain and deliver intrinsic enjoyment (i.e., eliminating dullness and lifelessness). Findings from offline, in-store research indicate that utilitarian and hedonic value dimensions play nearly equal roles in predicting behavioral intentions (Babin and Attaway 2000; Babin, Darden, and Griffin 1994). Besides utilitarian benefits, experiential benefits experienced in online stores might offer another important incentive for consumers to return to a specific (online) store (Marie Fiore, Jin, and Kim 2005; Fiore, Kim, and Lee 2005; Sullivan, Kang, and Heitmeyer 2012). Although the overall relationship between experiential value and re-patronage intention is likely to be positive, the strength of this relationship is likely to be driven directly by each type of value received.

- H3a** Perceptions of aesthetics have a direct positive impact on re-patronage intentions.
- H3b** Perceptions of playfulness have a direct positive impact on re-patronage intentions.
- H3c** Perceptions of consumer return on investment have a direct positive impact on re-patronage intentions.
- H3d** Perceptions of service excellence have a direct positive impact on re-patronage intentions.

3.4 Integrated model of virtual product experience

The proposed research model is presented in Figure 2. Each path in the model constitutes a research hypothesis of this study. In summary, the model posits that dynamic product representations involve vivid cues of product use rather than static representations, thus generating more concrete mental representations (i.e., higher levels of mental imagery processing) of products and their use. Furthermore, once aroused, mental imagery is likely to have a positive influence on the process of value creation, which consumers subsequently exploit with repeated visits.



Note: lower-order factors and intercorrelations are not shown for simplicity.

Figure 2. Proposed research model.

4. Method

4.1 Research design and participants

This study is based on a single-factor, between-subjects design, in which product representation (dynamic vs. static) was manipulated in an online store. Participants were recruited in two steps. First, 150 undergraduate students participated in the experiment in exchange for partial completion of a course requirement. Subsequently, each student was asked to find four other individuals (between the ages of 18 and 35 years) who would be willing to participate in the experiment. This sample population was considered appropriate, given that people this age range make up Gen Y. This emerging generation shows to be well educated, techno-literate, materialistic and therefore represent a typical consumer segment for fast fashion online stores (Colucci and Scarpi 2013). In all, 771 participants completed the experiment. The validity of the data was tested through two alternative procedures. First, 62 (8.0%) cases were eliminated because participants did not follow the instructions (see *infra*). Second, multivariate outlier analysis was used to detect outliers and suspicious response patterns. The Mahalanobis distance was calculated for the responses relating to six central variables in the dataset (mental imagery, aesthetics, playfulness, service excellence, consumer return on investment, and re-patronage intentions), as well as for the control variables (age

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

and duration of the website visit). This analysis revealed 31 (4.0%) outliers for which the observed Mahalanobis distance exceeded the 99.999% quantile. Another 18 (2.3%) cases were eliminated because they were more than three standard deviations removed from the mean of one of the eight variables. This left a final sample of 660 valid cases involving people between the ages of 18 years to 35 years ($M_{\text{age}} = 24.51$, $SD = 4.03$), 372 of whom were women.

4.2 Stimuli

Apparel was selected as the experimental product for two reasons. First, apparel is familiar and relevant to the sample population. Second, the consumption of apparel involves many highly sensory experiences, as the dominant attributes of apparel (e.g., texture, fit, look, and feel) are quite tangible, and they strongly invite consumers to handle and try on the items. In this study, an actual apparel brand, H&M ®, was used to increase the ecological validity and legitimacy of the experiment. The online store of H&M was selected primarily because it represents the fast fashion segment of the market (Zhenxiang and Lijie 2011). Furthermore, young adults of Gen Y (both men and women) are a natural target segment of the store, as well as the online store was not operational in the region in which the study took place (thus limiting prior exposure to the online store). The original H&M website (which does not ship to the study region) was used as the dynamic condition in the experiment. The site included an interactive mix-and-match technology (print-screens of the stimuli can be found in appendix A), which allowed users to simulate how apparel items would look together on a model, adjust viewing angles and background colors, and alter the appearance of products. For example, shoppers could match a top with a jacket and open the closed jacket by clicking on the jacket worn by the model. A professionally produced static version of that same online store was created specifically for this study. The static version of the online store included fixed, rigid images of the apparel (these images were of the same quality as those in the dynamic condition). The two versions were held constant with regard to design, content, and the number of apparel items, such that they differed only with regard to product representation. In a pretest, 13 undergraduate marketing students browsed both versions of the online store. They checked the operation of the stimulus websites and assessed the perceived ease of use and realism using seven-point Likert scales. All items produced means above five (5.00–5.83), suggesting that both versions of the online store are good representations of currently available online stores. Results of *t*-tests revealed no significant differences between the two stimulus websites with regard to the two items (all *p*'s >.05), thus implying that the

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

manipulation did not influence the respondents' perceptions of the user-friendliness and realism of the websites.

4.3 Procedure

As specified in the instructions, participants followed a link to an online questionnaire, and they were randomly assigned to one of the two versions of the online store. No significant differences in terms of age, gender, online shopping experience, or brand name effect (H&M) were found across the two treatment conditions (all p 's > .05). This implies that the two groups did not differ with regard to the individual background variables (i.e., they were two homogeneous groups). Participants were provided with brief instructions, and they were asked to perform a shopping task. More specifically, participants were asked to navigate to the appropriate section of the store (i.e., men's or women's apparel) to compose an outfit of their choice consisting of multiple items, with a budget of approximately €100. Participants were also instructed to make use of the website features to explore the apparel items thoroughly. Finally, participants were asked to list the item numbers of the chosen apparel items in the questionnaire. Only participants who used the website's interactive features could find the item numbers. Participants who did not list item numbers were thus excluded from analysis. Using a self-paced design, participants were in control of the length of the visit and the sequence in which they visited the online store, similar to a real situation. Next, participants were asked questions relating to the central constructs, sociodemographic variables, and manipulation checks (see 4.4 Measures). Additional checks were incorporated into the online questionnaire to confirm that participants had actually performed the shopping task. After completing the questionnaire, participants were debriefed and thanked.

4.4 Measures

To verify whether the manipulation of the representation mode was successful, the participants were asked to indicate the degree to which they agreed or disagreed with the following two seven-point Likert items: (1) 'The website I just saw included dynamic representations of apparel,' and (2) 'The website I just saw included animated representations of apparel.'

Mental imagery processing was measured using the scale that Schlosser (2003) developed to assess the degree of imagery evoked by a specific communication, as opposed to a person's ability to engage in imagery. This scale incorporated the elaboration and vividness dimension of mental imagery (Babin and Burns 1998) into a one-dimensional measure (explaining 65%

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

of the variance). Four items measured the activation of stored information in the production of mental images beyond what is provided by the stimulus and likewise, how vivid these evoked images were. In other words, the scale assessed the extent to which one embellished the mental representation of a stimulus. Mental imagery itself was not manipulated, as participants were not specifically instructed to imagine during the shopping task. Only the natural occurrence of imagery processes was measured.

Experiential value perceptions were measured using validated items from the EVS developed by Mathwick and colleagues (2001) to indicate four dimensions of consumer experiential value: aesthetics, playfulness, consumer return on investment, and service excellence. The EVS measures the four dimensions by exploring seven factors: visual appeal, entertainment, escapism, enjoyment, efficiency, excellence, and economic value.

The measure for re-patronage intention was created by modifying a self-report patronage intention scale developed by Fiore and colleagues (2005). The ability to capture the participants' intentions to return to the online store (re-patronage) was enhanced by adding the following item: 'If I am looking for certain products in the future, this online store is one of the first stores I will visit.'

Table 1 presents the Cronbach's alpha scores, descriptive statistics, and correlations of the above described constructs. As shown in Table 1, all of the Cronbach's alpha scores for the central constructs exceeded the recommended cutoff point of .70. Appendix B.1 shows the detailed questions.

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

Table 1 Descriptive Statistics and Correlations.

Dimension	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Representation mode	(n.a.)												
2. Mental imagery	.48	(.85)											
3. Visual appeal	.29	.62	(.90)										
4. Entertainment value	.34	.72	.81	(.90)									
5. Escapism	.18	.37	.47	.55	(.88)								
6. Intrinsic enjoyment	.18	.38	.48	.56	.68	(.85)							
7. Efficiency	.09 ^{ns}	.18	.26	.30	.33	.33	(.85)						
8. Economic value	.08 ^{ns}	.16	.23	.27	.29	.29	.36	(.73)					
9. Aesthetics	.35	.75	.83	.97	.57	.57	.31	.27	(.91)				
10. Playfulness	.22	.45	.58	.67	.82	.83	.40	.35	.69	(.87)			
11. CROI	.14 ^{ns}	.28	.40	.47	.52	.52	.64	.56	.48	.63	(.77)		
12. Service excellence	.24	.51	.56	.66	.55	.55	.37	.33	.68	.66	.59	(.74)	
13. Re- patronage	.21	.44	.55	.64	.60	.60	.45	.40	.66	.73	.71	.54	(.88)

Note: N= 660; CROI = Consumer return on investment; number in parentheses is the Cronbach's alpha; n.a. = Cronbach's alpha is not applicable; correlations greater than .14 are significant at the level of $p < .05$; ns = correlation is nonsignificant.

5. Results

5.1 Manipulation Check

The manipulation of product representation was successful in creating variance in the perceived dynamic scores. An analysis of variance reveals that the participants perceived the dynamic product representation as more dynamic than they did the static product representation ($M_{\text{static}} = 3.89$, $SD = 1.50$ vs. $M_{\text{dynamic}} = 5.09$, $SD = 1.38$; $F(1,658) = 109.40$, $p < .001$, $r = .39$). These representations were also perceived as more animated ($M_{\text{static}} = 3.30$, $SD = 1.53$ vs. $M_{\text{dynamic}} = 4.73$, $SD = 1.37$; $F(1,658) = 159.57$, $p < .001$, $r = .44$).

5.2 Direct effects

To determine the *direct* effects of product representation mode on mental imagery, aesthetics, playfulness, consumer return on investment, excellence and re-patronage intention a MANOVA was conducted. Using Pillai's trace, there is a significant effect of representation mode on the six dependent variables under study $V=0.24$, $F_{(5,654)} = 40.71$, $p < .001$, *partial* $\eta^2=.24$. Separate univariate ANOVA's on the outcome variables revealed highly significant treatment effects on mental imagery ($F_{(1,658)} = 161.59$, $p < .001$, *partial* $\eta^2=.20$) and aesthetics ($F_{(1,658)} = 92.71$, $p < .001$, *partial* $\eta^2=.12$). Significant effects were also found for playfulness ($F_{(1,658)} = 13.74$, $p < .001$, *partial* $\eta^2=.02$) and patronage intention ($F_{(1,658)} = 7.96$, $p < .001$,

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

partial $\eta^2=.01$). However, a non-significant effect was revealed for consumer return of investment ($F_{(1,658)} = 3.03, NS$). Indicating that the dynamic online store did not differ from the static store regarding perceived consumer return of investment. Table 2 provides a summary of the results.

Next, to closely examine the hypothesized *mediating processes* of mental imagery and experiential value we opted for a latent variable structural equation modeling approach.

Table 2 Means of constructs under study by product representation mode.

	Static sample N = 341		Dynamic sample N = 319		<i>p</i>
	Mean	SD	Mean	SD	
Mental imagery	3.05	0.82	3.83	0.74	***
Aesthetics	3.97	1.20	4.84	1.13	***
Playfulness	2.92	1.31	3.30	1.32	***
CROI	4.47	1.03	4.33	0.97	NS
Service excellence	3.20	1.14	3.60	1.13	***
Re- patronage	3.59	1.47	3.92	1.46	**

Note: CROI, Consumer return on investment; *** $p < .001$, ** $p < .01$, NS = non-significant

5.3 Measurement Model

The hypothesized model was tested using structural equation modeling (SEM) using Mplus software (Muthén & Muthén, 1998). Fornell and Larcker (1981) acknowledge the advantage of SEM with observed constructs for parameter estimation and hypothesis testing in causal models. Since the proposed model is theoretically hypothesized, and all constructs are adapted from previous studies, the use of confirmatory factor analysis (CFA) and SEM is appropriate. First, all latent constructs with multiple items in this study were subjected to CFA. This procedure thus involved fitting a fully correlated 12-factor CFA model (with three experiential value dimensions as second-order constructs) containing 25 items to the data. Preliminary analysis of the data revealed evidence of non-normality. The estimator used for subsequent modeling is therefore MLMV,¹ a robust estimator that handles non-normality in the data and provides a mean-and-variance-adjusted χ^2 test of model fit (Muthén & Muthén, 1998). Model fit was assessed using the ^{MLMV} χ^2 goodness-of-fit test, the comparative fit index

¹ The MLMV is preferable to the MLM estimator because it outperforms the MLM for smaller sample sizes ($n < 1000$; see Asparouhov, 2005).

(CFI), the Tucker-Lewis index (TLI), and the RMSEA, with recommended cutoff points of .90 for CFI and TLI and with values below .06 for RMSEA (Hu & Bentler, 1999)

As expected, given its sensitivity to sample size, the model χ^2 value is statistically significant ($\chi^2_{(254)} = 666.51, p < .001$), but indices generated by this measurement model demonstrate an adequate fit with the data (CFI = .94; TLI = .93; RMSEA = .050).

Discriminant validity is difficult to establish when working with multidimensional hierarchically organized constructs (as is the case with the EVS). The existence of a second-order-factor structure implies that the dimensions of experiential value share common variance (Mathwick et al., 2001). The discriminant validity of the measurement instrument was therefore demonstrated in two steps, beginning with the weak assessment of the related first-order constructs for experiential value by verifying that the confidence interval (\pm two standard errors) for each pairwise correlation estimate did not include the value of 1.0. In this study, each of the seven first-order constructs satisfies this criterion ($r < .71$). Secondly, the discriminant validity between the six major latent constructs in the model was assessed using a constrained analysis method, which involves setting the correlation between two constructs in a pairwise fashion² to unity (1.0) and running the model again (Anderson and Gerbing 1988). A χ^2 difference test on the values obtained from the constrained and unconstrained models was performed. The results indicate that the constructs are far from being perfectly correlated, thus confirming discriminant validity in all pairwise tests ($p < .001$). The convergent validity of the constructs was also examined. All items have factor loadings exceeding the benchmark of .5 (Steenkamp and van Trijp 1991), and each factor loading is highly significant ($p < .001$), thus suggesting good convergent validity.

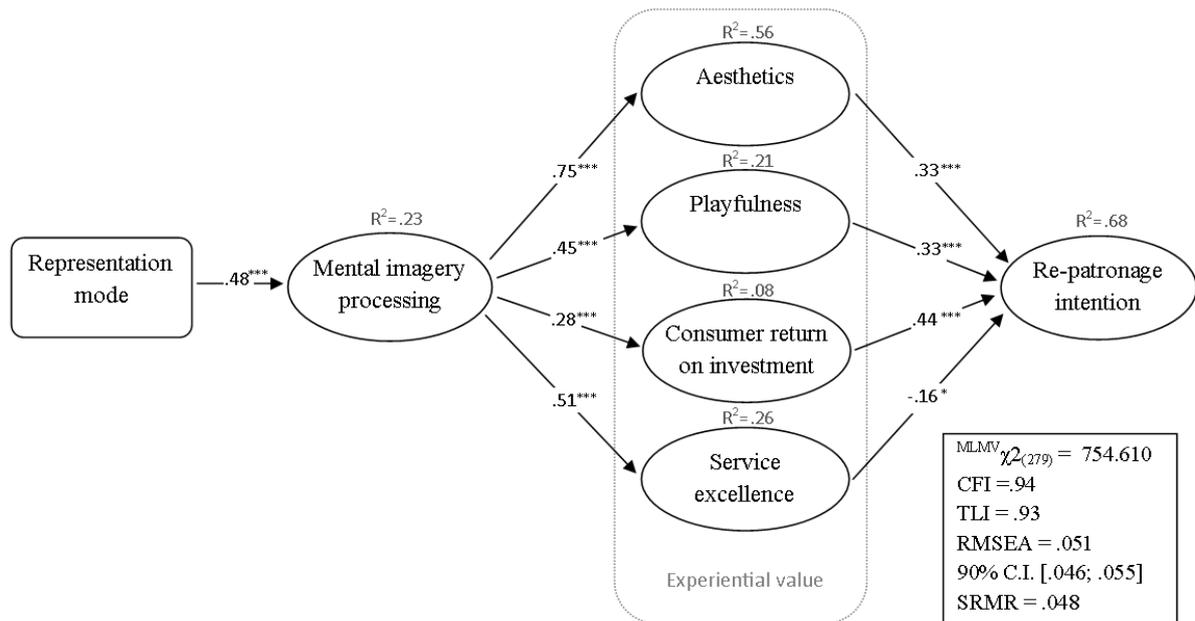
5.4 Structural model

The structural model was assessed as follows. First, all six constructs in the proposed research model were represented as latent variables. Representation mode was analyzed as a single-item independent variable with no measurement error. It was coded as a dummy variable, with '1' representing dynamic product representation and '0' representing static product representation. Furthermore, as theoretical discussion suggests (Holbrook 1999; Mathwick, Malhotra, and Rigdon 2001; Smith and Colgate 2007), the dimensions of experiential value were organized hierarchically, with aesthetics, playfulness, and consumer return on investment operating as second-order factors. Service excellence, the fourth

² This test was performed for one pair of factors at a time (15 pairs) so that a non-significant value for one pair of factors would not be undetectable when testing simultaneously with several pairs having significant values.

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

dimension, was modeled as a first-order factor. Evidence from the literature indicates that the existence of a second-order-factor structure implies that factors share common variance (Mathwick et al., 2001). Accordingly, all four dimensions were allowed to intercorrelate freely with each other in the CFA model ($r = .42 - .60$). Second, based on the hypotheses, the mode of representation was entered as the predictor variable; mental imagery processing and experiential value dimensions were entered as mediating variables; and re-patronage intention was entered as the outcome variable. Structural equation modeling was performed in order to identify overall relationships among the constructs. All examined goodness-of-fit indices are satisfactory ($^{MLMV}\chi^2(279) = 754.61, p < .001, CFI = .94, TLI = .93, RMSEA = .051$), indicating that the proposed model describes the data well. The results also provide support for eight out of nine hypothesized relationships and the model explains 68% of the variance in re-patronage intention, thereby reinforcing confirmation of the conceptual model. The standardized estimated structural model is presented in Figure 3.



Note: standardized path estimates are reported, *** $p < .001$, * $p < .05$; lower-order factors and intercorrelations are not shown for simplicity.

Figure 3. Results for the structural model.

5.5 Hypothesis testing

As expected, the dynamic mode of representation has a positive influence on mental imagery processing ($\beta = .48, p < .001$; H1), thus indicating that the mix-and-match feature

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

engaged consumers in higher levels of mental imagery processing than did the static product representations. The results also reveal that mental imagery processing strongly affects all four experiential value dimensions. As hypothesized, mental imagery processing exhibits significant positive effects on aesthetics ($\beta = .75, p < .001$; H2a), playfulness ($\beta = .45, p < .001$; H2b), consumer return on investment ($\beta = .28, p < .001$; H2c), and service excellence ($\beta = .51, p < .001$; H2d). In turn, all dimensions of experiential value have significant effects on re-patronage intention. As hypothesized, the effect of aesthetics on re-patronage intention is significant and positive ($\beta = .33, p < .001$; H3a). Similarly, playfulness ($\beta = .33, p < .001$; H3b) and consumer return on investment ($\beta = .44, p < .001$; H3c) affect re-patronage intention positively. Surprisingly, although service excellence has a significant influence on re-patronage intention, the direction of the effect is the opposite of what was predicted ($\beta = -.16, p < .05$; H3d)³.

5.6 Testing the Robustness of the Model

Although the role of gender is not formally addressed by a hypothesis, the data allow us to test the robustness of the model by estimating the moderating effect of gender in the model. The effects of product representation on subsequent responses might depend on gender because, for example, younger women are likely to enjoy shopping for sensory stimulation more than their male counterparts are (e.g., Kotzé et al. 2012). A multi-group analysis was conducted comparing males with females. A detailed analysis of the structural paths shows that the relationships did not differ between the male and female groups ($\Delta\chi^2(9) = 5.10, p = .83$). Males appear to imagine the apparel in use to the same extent than females do and imagery processing does play a similar role in the process of value creation. Gender does also not appear to influence the relationships between the value dimensions and re-patronage intention. In all, the conclusions do not substantially vary as a function of gender.

6. Discussion and Conclusion

Prior research indicates that mental imagery processing can be evoked by various external stimuli (Babin and Burns 1997; Bone and Ellen 1992), although this subject has been sparsely

³ This effect might be due to collinearity. Although we did not detect collinearity using conventional measures (VIF < 2.43; tolerance > 0.40), we did find Pearson correlation coefficients between 0.6 and 0.8 for service excellence. Grewal and colleagues (2004) argue that in this case type II error rates can be substantial. Hence, we are unable to exclude the very real possibility that collinearity might have affected the results. In this regard, we have recalculated the model omitting service excellence. Both approaches yield virtually the same results with the only difference being that the relationships between the remaining EVS dimensions and re-patronage intention are slightly less intense (e.g., for playfulness $\beta = .30$ I/O $\beta = .33$).

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

addressed in contexts involving online stores or online product experiences. This study reconfirms the finding that the way in which products are represented in a mediated environment has a dominant influence on mental imagery processing. This mechanism also applies to the context of fast fashion online stores. Results of structural equation modeling indicate that dynamic mix-and-match technology provides Gen Y consumers with sufficient cues to bring mental images of actual product interactions to mind, while engaging them in higher levels of mental imagery processing than static images do. The results also confirm the proposition of MacInnis and Price (1987) that the inability to examine products physically makes mental imagery an important tool for recreating some of the stimulation that consumers usually derive from actual product interaction. Although most online stores (including fast fashion stores) currently employ text and pictures to present product information (Lee 2012; Scarpi 2012), it is becoming increasingly evident that text and static pictures are insufficient to represent important experiential attributes (e.g., feel, fit, and performance) in this context. This study reveals that dynamic product representations in fast fashion online stores might be able to overcome this problem.

Another proposition in the current study is that mental imagery processing is an important antecedent in the value-creation process. Although the mental imagery evoked generally enhances consumer shopping experiences, the model also confirms that each value component can be clearly delineated as a specific type of value, with each playing its own role in creating value during the shopping experience. With regard to intrinsic benefits, mental imagery stimulates an appreciation of aesthetics, in addition to a playful shopping experience. This result suggests that mental imagery enriches sensory information and makes products appear extra attractive to consumers in fast fashion online stores. In fact, the current results indicate that online stores are capable of providing a convincing amount of intrinsic value when they include dynamic interactive representations that arouse mental imagery. The results further suggest that mental imagery offers extrinsic benefits to varying degrees. The arousal of mental images of product interaction enhances observed service performance. In other words, enhances the extent to which online retailers respond promptly and capably to consumer needs throughout the entire shopping process (service excellence). In the same way, albeit to a far lesser extent, mental imagery improves perceived consumer return on investment. Consumers use mental imagery as part of a problem-solving approach, although far less extensive than as part of aesthetics and enjoyment. As demonstrated by the results of this study, shoppers who perceive that an online store provides interactive virtual cues that elicit mental imagery feel rewarded by the fun and attractiveness of these cues, as well as by the

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

excellence and efficiency of the shopping experience. In other words, mental imagery apparently eases the constraints associated with the lack of physical examination, thus generating a holistic valuable experience (as suggested by Holbrook, 1999). The results of the current study is in line with findings in existing literature concerning the importance of perceived substitutability (i.e., to compensate for the lack of sensory inputs) as a decisive factor in online shopping experiences (Dennis, Jayawardhena, and Papamatthaiou 2010).

Re-patronage intentions are positively affected by three dimensions of experiential value. Interestingly, two out of three important dimensions, playfulness and consumer return on investment, have to do with the participative role of the consumer (active value). Consumers are likely to pay repeat visits to online stores that offer shopping experiences that involve enhanced collaboration through some type of virtual and mental manipulation of objects or experiences. Online stores should therefore activate and engage consumers in the process of online value creation rather than considering them as passive recipients of brand identities projected by marketers. Contrary to expectations, perceived service excellence is a negative predictor of re-patronage intention. The existing literature apparently offers no explanation for this negative relationship. We argue that there might be an indication of collinearity, although not according to conventional tests. In the presence of collinearity, the estimate of service excellence's impact on re-patronage intention while controlling for others might be less precise (Grewal, Cote, and Baumgartner 2004). Any suggestion of a negative relationship must therefore remain exploratory pending further research. We suggest that there might be two separate mechanisms at stake when assessing service excellence. To be more precise, consumers may either appreciate service excellence due to hedonic features (excellent service because it provides me with enjoyment, fun, escapism) or due to utilitarian features (excellent service because it is fast and efficient). Future research that disentangles the hedonic and utilitarian dimensions of (perceived) service excellence might help explaining our finding.

Overall, the results of this study are consistent with the findings of other studies, which have reported that an enhanced experience provided by interactive technologies results in more favorable product evaluations than static product representations (Li, Daugherty, and Biocca 2003; Kim and Forsythe 2010). This study adds that mental imagery processing aroused by image interactivity is an important underlying source of online experiential value perceptions. Results indicate that online interactive product experiences stimulate consumers' thoughts and provide multiple consumer benefits more than static images do.

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

6.1 Managerial implications

In addition to the suggested theoretical contributions, this study offers several managerial implications. The results show that, despite the inability to make ‘real’ contact with the products, all sources of consumer value are pivotal in the context of fast fashion online shopping. The incorporation of dynamic product representations in the online store, thereby arousing mental images of product interaction, can enable, support, and direct consumers in the creation of extensive value. This suggests that the pool of online consumers has considerable potential for expansion, because a holistic and thereby more compelling shopping experience may appeal to a new group of consumers. Existing evidence (Scarpi 2012) suggests that hedonically oriented consumers are more profitable than utilitarian consumers are. Online retailers should therefore represent their products in such a way as to exploit their full experiential potential, thus appealing to hedonic consumers. Nevertheless, consumer return on investment remains an important predictor of re-patronage intention. Finding the right balance between the two extremes is an important challenge for both academics and practitioners.

6.2 Limitations and future research

The present research is subject to several limitations that future researchers should consider. First, this study was limited to members of Gen Y. Individuals in this age group (18-35 years) differ from older individuals (e.g., Generation X) in terms of their experiences or proficiency in using the dynamic mix-and-match feature. Caution is therefore advised when generalizing the proposed model to other age groups.

Second, the study was limited to a single product category (i.e., fast fashion), thus further constraining the generalizability of the results. The number of product categories should therefore be extended, with the goal of replicating the findings across different product categories. Moreover, in this study, virtual experiences were provided for apparel, whose dominant attributes have to do with experiences that are difficult to digitize (e.g., texture, fit, and feel). This type of experiential attributes might strongly invite consumers to imagine product trials. The potential to provoke mental imagery might be less important for products that are dominated by searchable attributes or digitizable experiential characteristics (e.g., books and USB sticks), as sensory information is less important for evaluating these products (Nelson 1974).

Third, the almost relentless stream of technological innovations provides online retailers with the opportunity to integrate a wide range of tools and features for showcasing their

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

products (e.g., extensive zoom, video, 3D applications, augmented reality). The current study examines only one specific feature (i.e., mix-and-match technology). Future research might benefit from including other dynamic tools, thus further developing knowledge regarding the effect of various dynamic cues incorporated into online stores.

In addition, this study examines the effects of virtual product representation cues on only a few constructs that figure into re-patronage decisions. Additional competing models could be tested. Future studies should therefore investigate whether and how product representations and mental imagery might influence perceived ownership, frustration, satisfaction, or loyalty (Kamleitner 2011; Valvi and Fragkos 2012). Furthermore, an additional construct of interest could be telepresence. This concept refers to the illusion of ‘being there’ in a mediated environment (Kim and Biocca 1997; Steuer 1992). The current study focuses on mental images of experiential contact with *products* rather than on the feeling of being in a *world* created by the computer (as is the case with telepresence). However, at the same time it has been suggested that an *authentic representation* of the direct (in-store) experience has more relevance to e-retailing than does telepresence (Algharabat and Dennis 2010; Merrilees 2005). That is to say, whereas telepresence reflects the illusion and transportation to other places, authenticity refers to the extent to which virtual objects are perceived as actual objects in a sensory way in computer-mediated environments (Algharabat and Dennis 2010). Future research should therefore also explore the perceived authenticity of the product visualization.

To conclude, further research, both in theoretical and methodological directions, should reinforce the idea that research on perceived value can broaden the vision and understanding of e-retailing as a multifaceted consuming experience.

Acknowledgements

The authors would like to thank the anonymous reviewers for their valuable suggestions and comments to improve the quality of the manuscript.

References

- Algharabat, R., and C. Dennis. 2010. "Using Authentic 3D Product Visualisation for an Electrical Online Retailer." *Journal of Customer Behaviour* 9 (2): 97–115.
- Anderson, J. C., and D. W. Gerbing. 1988. Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin* 103 (3): 411–23.
- Anema, H. A., A. M. de Haan, T. Gebuis, and H. C. Dijkerman. 2012. Thinking about Touch Facilitates Tactile but Not Auditory Processing. *Experimental Brain Research*. 218 (3): 373–80.
- Babin, B. J., and J. S. Attaway. 2000. Atmospheric Affect as a Tool for Creating Value and Gaining Share of Customer. *Journal of Business Research* 49 (2): 91–99.
- Babin, B. J., W. R. Darden, and M. Griffin. 1994. Work And/or Fun: Measuring Hedonic and Utilitarian Shopping Value. *Journal of Consumer Research* 20 (4): 644–56.
- Babin, L. A., and A. C. Burns. 1997. Effects of Print Ad Pictures and Copy Containing Instructions to Imagine on Mental Imagery That Mediates Attitudes. *Journal of Advertising* 26 (3): 33–44.
- Babin, L. A., and A. C. Burns. 1998. A Modified Scale for the Measurement of Communication-Evoked Mental Imagery. *Psychology and Marketing* 15 (3): 261–78.
- Bone, P. F., and P. S. Ellen. 1992. The Generation and Consequences of Communication-Evoked Imagery. *Journal of Consumer Research* 19 (1): 93–104.
- Burns, A. C., A. Biswas, and L. A. Babin. 1993. The Operation of Visual Imagery as a Mediator of Advertising Effects. *Journal of Advertising* 22 (2): 71–85.
- Chang, E., and Y. Tseng. 2013. Research Note: E-Store Image, Perceived Value and Perceived Risk. *Journal of Business Research* 66 (7): 864–70.
- Childers, T. L., C. L. Carr, J. Peck, and S. Carson. 2001. Hedonic and Utilitarian Motivations for Online Retail Shopping Behavior. *Journal of Retailing* 77 (4): 511–35.
- Childers, T. L., S. E. Heckler, and M. J. Houston. 1986. Memory for the Visual and Verbal Components of Print Advertisements. *Psychology and Marketing* 3 (3): 137–49.
- Colucci, M., and D. Scarpi. 2013. "Generation Y: Evidences from the Fast-Fashion Market and Implications for Targeting." *Journal of Business Theory and Practice* 1 (1): p1-7.
- Cui, Y., E. S. Trent, P. M. Sullivan, and G. N. Matiru. 2003. "Cause-Related Marketing: How Generation Y Responds." *International Journal of Retail & Distribution Management* 31 (6): 310–20.

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

- Dennis, C., C. Jayawardhena, and E. Papamatthaiou. 2010. Antecedents of Internet Shopping Intentions and the Moderating Effects of Substitutability. *The International Review of Retail, Distribution and Consumer Research* 20 (4): 411–30.
- Fiore, A. M., J. Kim, and H. Lee. 2005. Effect of Image Interactivity Technology on Consumer Responses toward the Online Retailer. *Journal of Interactive Marketing* 19 (3): 38–53.
- Fiore, A. M., H. Jin, and J. Kim. 2005. For Fun and Profit: Hedonic Value from Image Interactivity and Responses toward an Online Store. *Psychology & Marketing* 22 (8): 669–94.
- Fornell, Claes, and David F. Larcker. 1981. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research* 18 (1): 39–50.
- Gallarza, M. G., and I. G. Saura. 2006. Value Dimensions, Perceived Value, Satisfaction and Loyalty: An Investigation of University Students' Travel Behaviour. *Tourism Management* 27 (3): 437–52.
- Grewal, R., J. A. Cote, and H. Baumgartner. 2004. "Multicollinearity and Measurement Error in Structural Equation Models: Implications for Theory Testing." *Marketing Science* 23 (4): 519–29.
- Holbrook, M. B., and E. C. Hirschman. 1982. The Experiential Aspects of Consumption - Consumer Fantasies, Feelings, and Fun. *Journal of Consumer Research* 9 (2): 132–40.
- Holbrook, M. B. 1999. "Introduction to Consumer Value." In *Consumer Value: A Framework for Analysis and Research*, edited by M. B. Holbrook. Routledge Chapman & Hall.
- Jiang, Z., and I. Benbasat. 2007. Investigating the Influence of the Functional Mechanisms of Online Product Presentations. *Information Systems Research* 18 (4): 454–70.
- Kamleitner, B. 2011. When Imagery Influences Spending Decisions: The Role of Ownership Simulations. *Zeitschrift Für Psychologie/Journal of Psychology* 219 (4): 231–37.
- Kim, J., and S. Forsythe. 2008. Adoption of Virtual Try-on Technology for Online Apparel Shopping. *Journal of Interactive Marketing* 22 (2): 45–59.
- Kim, J., and S. Forsythe. 2010. Adoption of Dynamic Product Imagery for Online Shopping: Does Age Matter? *The International Review of Retail, Distribution and Consumer Research* 20 (4): 449–67.
- Kim, T., and F. Biocca. 1997. Telepresence via Television: Two Dimensions of Telepresence May Have Different Connections to Memory and Persuasion. *Journal of Computer-Mediated Communication* 3 (2): 0–0.

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

- Klein, L. R. 2003. Creating Virtual Product Experiences: The Role of Telepresence. *Journal of Interactive Marketing* 17 (1): 41–55.
- Kosslyn, S. M., G. Ganis, and W. L. Thompson. 2001. Neural Foundations of Imagery. *Nature Reviews. Neuroscience* 2 (9): 635–42.
- Kotzé, T., E. North, M. Stols, and L. Venter. 2012. “Gender Differences in Sources of Shopping Enjoyment.” *International Journal of Consumer Studies* 36 (4): 416–24.
- Lang, P. J. 1979. A Bio-Informational Theory of Emotional Imagery. *Psychophysiology* 16 (6): 495–512.
- Lee, K. 2012. Consumer Processing of Virtual Experience in E-Commerce: A Test of an Integrated Framework. *Computers in Human Behavior* 28 (6): 2134–42.
- Lee, W., and U. Gretzel. 2012. Designing Persuasive Destination Websites: A Mental Imagery Processing Perspective. *Tourism Management* 33 (5): 1270–80.
- Li, H. R., T. Daugherty, and F. Biocca. 2003. The Role of Virtual Experience in Consumer Learning. *Journal of Consumer Psychology* 13 (4): 395–407.
- Lindgreen, A. and F. Wynstra. 2005. Value in Business Markets: What Do We Know? Where Are We Going? *Industrial Marketing Management* 34 (7): 732–48.
- MacInnis, D. J., and L. L. Price. 1987. The Role of Imagery in Information Processing: Review and Extensions. *Journal of Consumer Research* 13 (4): 473–91.
- Mathwick, C., N. K. Malhotra, and E. Rigdon. 2001. Experiential Value: Conceptualization, Measurement and Application in the Catalog and Internet Shopping Environment. *Journal of Retailing* 77 (1): 39–56.
- Mcgoldrick, P. J., and N. Collins. 2007. Multichannel Retailing: Profiling the Multichannel Shopper. *The International Review of Retail, Distribution and Consumer Research* 17 (2): 139–58.
- Merrilees, B. 2005. “Emotional Brand Associations: A New KPI for E-Retailers.” *International Journal of Internet Marketing and Advertising* 2 (3): 206-18.
- Nelson, P. 1974. Advertising as Information. *Journal of Political Economy* 82 (4): 729.
- Oliver, R. 1999. “Value as Excellence in the Consumption Experience.” In *Consumer Value*, edited by Morris Holbrook. Routledge.
- Oliver, R L., T. S. Robertson, and D. J. Mitchell. 1993. Imaging and Analyzing in Response to New Product Advertising. *Journal of Advertising* 22 (4): 35–50.
- Overby, J. W., and E. Lee. 2006. The Effects of Utilitarian and Hedonic Online Shopping Value on Consumer Preference and Intentions. *Journal of Business Research* 59 (10–11): 1160–66.

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

- Parasuraman, A., and D. Grewal. 2000. The Impact of Technology on the Quality-Value-Loyalty Chain: A Research Agenda. *Journal of the Academy of Marketing Science* 28 (1): 168–74.
- Park, J., L. Stoel, and S. J. Lennon. 2008. Cognitive, Affective and Conative Responses to Visual Simulation: The Effects of Rotation in Online Product Presentation. *Journal of Consumer Behaviour* 7 (1): 72–87.
- Petrova, P. K., and R. B. Cialdini. 2008. “Evoking the Imagination as a Strategy of Influence.” In *Handbook of Consumer Psychology*, edited by C.P. Haugtvedt, P. Herr, and F. Kardes, 505–23. New York: Erlbaum.
- Ramanathan, R. 2010. E-Commerce Success Criteria: Determining Which Criteria Count Most. *Electronic Commerce Research* 10 (2): 191–208.
- Sánchez-Fernández, R., and M. Á. Iniesta-Bonillo. 2007. “The Concept of Perceived Value: A Systematic Review of the Research.” *Marketing Theory* 7 (4): 427–51.
- Scarpi, D. 2012. Work and Fun on the Internet: The Effects of Utilitarianism and Hedonism Online. *Journal of Interactive Marketing* 26 (1): 53–67.
- Schlosser, A. E. 2003. Experiencing Products in the Virtual World: The Role of Goal and Imagery in Influencing Attitudes versus Purchase Intentions. *Journal of Consumer Research* 30 (2): 184–98.
- Shukla, P., and B. J. Babin. 2013. Effects of Consumer Psychographics and Store Characteristics in Influencing Shopping Value and Store Switching. *Journal of Consumer Behaviour* 12 (3): 194–203.
- Smith, J. B., and M. Colgate. 2007. Customer Value Creation: A Practical Framework. *Journal of Marketing Theory and Practice* 15 (1): 7–23.
- Smith, R. E. 1993. Integrating Information from Advertising and Trial: Processes and Effects on Consumer Response to Product Information. *Journal of Marketing Research* 30 (2): 204–19.
- Smith, T. R., A. A. Mitchell, and R. Meyer. 1982. “A Computational Process Model of Evaluation Based on the Cognitive Structuring of Episodic Knowledge.” In *NA-Advances in Consumer Research Volume 09*, edited by A. A. Mitchell and A. Abor, 136–43. Association for Consumer Research.
- Steenkamp, J. E. M., and H. C. M. van Trijp. 1991. The Use of Lisrel in Validating Marketing Constructs. *International Journal of Research in Marketing* 8 (4): 283–99.
- Steuer, J. 1992. Defining Virtual Reality: Dimensions Determining Telepresence. *Journal of Communication* 42 (4): 73–93.

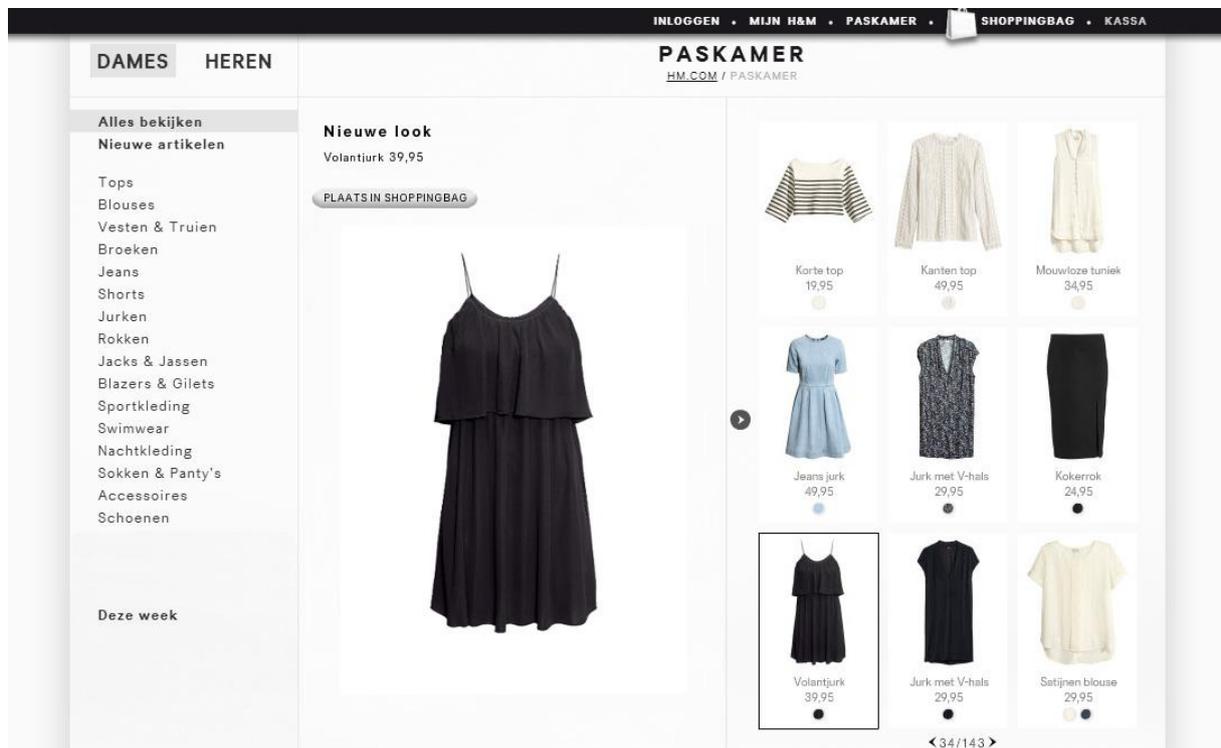
HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

- Sullivan, P., and J. Heitmeyer. 2008. "Looking at Gen Y Shopping Preferences and Intentions: Exploring the Role of Experience and Apparel Involvement." *International Journal of Consumer Studies* 32 (3): 285–95.
- Sullivan, P., J. Kang, and J. Heitmeyer. 2012. Fashion Involvement and Experiential Value: Gen Y Retail Apparel Patronage. *The International Review of Retail, Distribution and Consumer Research* 22 (5): 459–83.
- Sweeney, J. C., and G. N. Soutar. 2001. Consumer Perceived Value: The Development of a Multiple Item Scale. *Journal of Retailing* 77 (2): 203–20.
- Thompson, D. V., and R. W. Hamilton. 2006. The Effects of Information Processing Mode on Consumers' Responses to Comparative Advertising. *Journal of Consumer Research* 32 (4): 530–40.
- Valvi, A. C., and K. C. Fragkos. 2012. Critical Review of the E-Loyalty Literature: A Purchase-Centred Framework. *Electronic Commerce Research* 12 (3): 331–78.
- Willems, K. 2012. "Differentiation Strategy in Retailing". Hasselt: Universiteit Hasselt & Vrije Universiteit Brussel.
- Wu, J., and C. Holsapple. 2014. Imaginal and Emotional Experiences in Pleasure-Oriented IT Usage: A Hedonic Consumption Perspective. *Information & Management* 51 (1): 80–92.
- Zeithaml, V. 1988. Consumer Perceptions of Price, Quality, and Value - a Means-End Model and Synthesis of Evidence. *Journal of Marketing* 52 (3): 2–22.
- Zhenxiang, W., and Z. Lijie. 2011. "Case Study of Online Retailing Fast Fashion Industry." *International Journal of E-Education, E-Business, E-Management and E-Learning* 3 (1): 195–200.

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

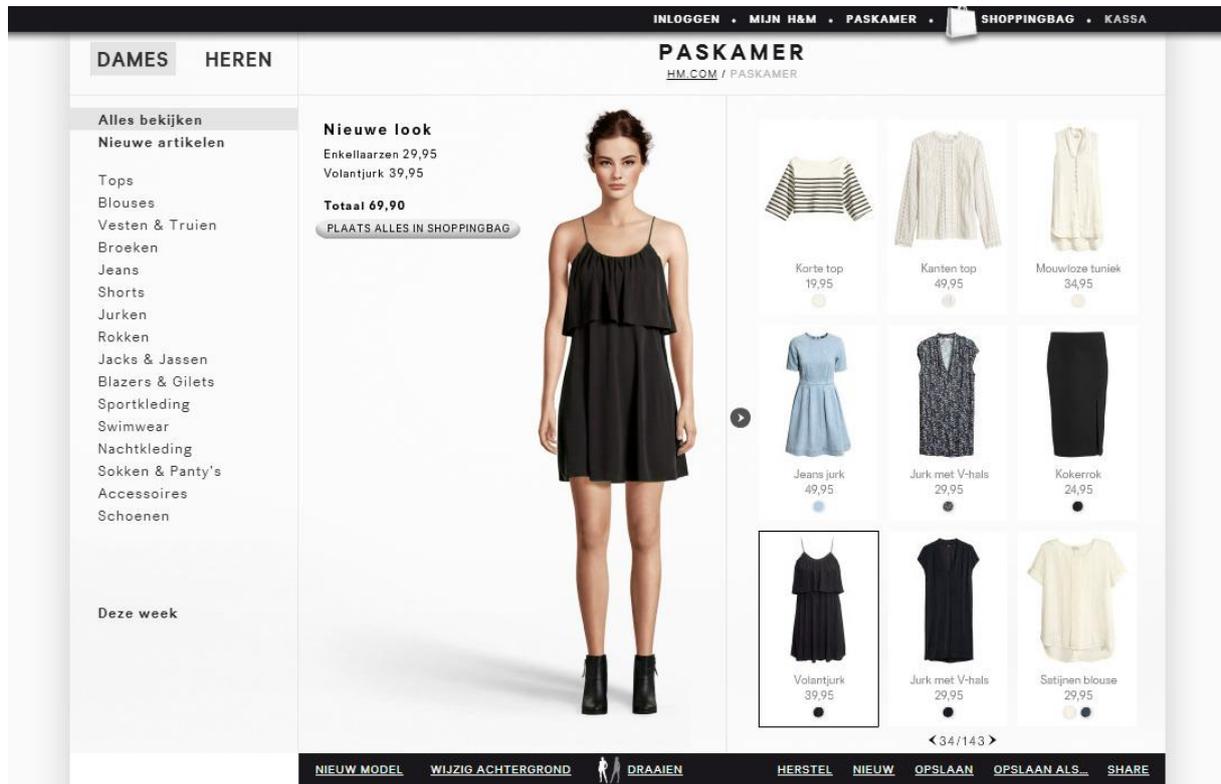
APPENDIX A. Experimental Conditions

Figure A.1 STATIC VERSION OF THE ONLINE STORE



HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

Figure A.2 DYNAMIC VERSION OF THE ONLINE STORE



HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

APPENDIX B. Measurement items

Table B.1 ITEMS AND CORRESPONDING DESCRIPTIVES

	Cronbach's α	Mean	SD	Range
Mental imagery processing				
The following questions ask for your opinion about the product representation on the website	.85			
1. How much did the web site bring to mind concrete images or mental pictures?		3.64	1.06	1-5
2. How vivid did you find the product presentation on this web site to be?		3.75	0.96	1-5
3. How much did the web site include features that helped you visualize a product trial?		3.64	1.02	1-5
4. How much did the web site provide features to help you imagine using the product?		2.68	1.16	1-5
Visual appeal	.89			
1. The way the web site displays its products is attractive		5.10	1.25	1-7
2. I like the way the web site looks		4.92	1.38	1-7
Entertainment value	.90			
1. I think the web site is very entertaining		4.46	1.50	1-7
2. The enthusiasm of the web site is catching, it picks me up		3.94	1.50	1-7
3. The web site doesn't just sell products, it entertains me		3.52	1.60	1-7
Escapism	.88			
1. Shopping from the web site "gets me away from it all"		3.05	1.54	1-7
2. Shopping from the web site makes me feel like I am in another world		2.88	1.56	1-7
3. I get so involved when I shop from the website that I forget everything		2.81	1.61	1-7
Intrinsic enjoyment	.85			
1. I enjoy shopping from the web site for its own sake, not just for the items I may have purchased		3.82	1.80	1-7
2. I shop from the web site for the pure enjoyment of it		2.96	1.63	1-7
Efficiency	.85			
1. Shopping from the web site is an efficient way to manage my time		4.02	1.58	1-7
2. Shopping from the web site makes my life easier		3.62	1.57	1-7
3. Shopping from the web site fits with my schedule		4.14	1.48	1-7
Economic value	.73			
1. The website products are a good economic value		4.79	1.20	1-7
2. Overall, I am happy with the web site prices		5.43	1.01	1-7
Excellence	.74			
1. When I think of the web site, I think of excellence		3.20	1.24	1-7
2. I think of the web site as an expert in the merchandise it offers		3.60	1.35	1-7
Re-patronage intention	.88			
1. I will visit the virtual store again		4.45	1.77	1-7
2. I will probably spend more time than planned in the virtual store		3.55	1.74	1-7
3. I will patronize the virtual store in the future		3.72	1.71	1-7
4. If I am looking for certain products in the future, this virtual store is one of the first stores I am going to visit		3.27	1.62	1-7

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

Table B.2 UNSTANDARDIZED AND STANDARDIZED PARAMETER ESTIMATES

<i>Observed variable</i>	<i>First-order latent construct</i>	<i>Second-order latent construct</i>	Results for measurement model		
			β	B	<i>Two-tailed p-value</i>
M1	Mental imagery		.790	1.00	
M2	Mental imagery		.796	0.90	0.000
M3	Mental imagery		.755	0.93	0.000
M4	Mental imagery		.739	1.06	0.000
V1	Visual appeal		.862	1.00	
V2	Visual appeal		.936	1.21	0.000
E1	Entertainment value		.880	1.00	
E2	Entertainment value		.905	1.02	0.000
E3	Entertainment value		.802	0.98	0.000
ES1	Escapism		.815	1.00	
ES2	Escapism		.895	1.12	0.000
ES3	Escapism		.819	1.05	0.000
I1	Intrinsic enjoyment		.849	1.00	
I2	Intrinsic enjoyment		.879	0.95	0.000
EF1	Efficiency		.832	1.00	
EF2	Efficiency		.904	1.06	0.000
EF3	Efficiency		.689	0.78	0.000
EC1	Economic value		.838	1.00	
EC2	Economic value		.689	0.69	0.000
	Visual appeal	Aesthetics	.831	1.00	
	Entertainment	Aesthetics	.972	1.48	0.000
	Escapism	Playfulness	.824	1.00	
	Enjoyment	Playfulness	.829	1.22	0.000
	Efficiency	CROI	.637	1.00	
	Economic value	CROI	.564	0.73	0.000
EX1	Service excellence		.825	1.00	
EX2	Service excellence		.707	0.94	0.000
P1	Re-patronage intention		.868	1.00	
P2	Re-patronage intention		.768	0.87	0.000
P3	Re-patronage intention		.806	0.90	0.000
P4	Re-patronage intention		.804	0.85	0.000

Note: CROI, Consumer return on investment; Model fit indices, $\chi^2_{(254)} = 666.51, p < .001, TLI = .93, CFI = .94, RMSEA = .050$

<i>Path</i>	Results for structural model		
	β	B	<i>Two-tailed p-value</i>
Representation mode to mental imagery	.475	.775	.000
Mental imagery to aesthetics	.745	.801	.000
Mental imagery to playfulness	.454	.565	.000
Mental imagery to CROI	.284	.287	.000
Mental imagery to service excellence	.513	.630	.000
Aesthetics to re-patronage intention	.332	.568	.000

HOW PRODUCT REPRESENTATION SHAPES VIRTUAL EXPERIENCES

Playfulness to re-patronage intention	.328	.485	.000
CROI to re-patronage intention	.435	.793	.000
Service excellence to re-patronage intention	-.157	-.236	.025

CROI, Consumer return on investment; Model fit indices, $\chi^2_{(279)} = 754.61, p < .001, CFI = .94, TLI = .93, RMSEA = .051, 90\% C.I = .046-.055$
