

CREATING VIRTUAL EXPERIENCES
IN COMPUTER-MEDIATED ENVIRONMENTS

August 2001

Lisa R. Klein

DRAFT

Lisa R. Klein is an Assistant Professor of Marketing at the Jones Graduate School of Management at Rice University, 6100 Main Street –MS51, Houston, TX 77005 (lklein@rice.edu). This research represents part of the author's doctoral dissertation and partially funded by a doctoral grant from Procter & Gamble under the Marketing Innovation Program and by the George Dively Award from the Harvard Business School. The author would like to thank her thesis chairman, Alvin J. Silk, for his continued support and advice. A special thanks is also given to Rick Bagozzi and Meg Meloy for their invaluable insights.

ABSTRACT

Although much excitement has arisen recently over the communication potential for “interactivity” on the Web, very little is understood about *what* exactly interactivity is and what it *does*. This research investigates the impact of the new digital media on consumers’ interpretations of their virtual product experiences and the product-based persuasion that results from them.

Given that direct product experience is usually the optimal method for consumers to learn about product information, one of the marketer’s goals should be to strive for verisimilitude in any indirect communications. This research explores how the Web might emulate direct experience and how the effects of these virtual experiences differ from those resulting from exposure to traditional advertising media. In order to measure the sense of experience within a computer-mediated environment, the construct of telepresence —a sense of presence in a mediated environment — is employed. This measure of telepresence is also used to evaluate the process by which media characteristics influence consumer responses to marketing communications. The two primary objectives of this research are to understand how telepresence is created and how it affects consumer response to computer-mediated communications. We explore two critical media characteristics that are hypothesized to influence telepresence: (1) user control (the operationalization of “interactivity”) and (2) media richness.

In two studies, user control and media richness were manipulated in computer-mediated advertisements. In study 1, 140 adult participants explored an advertisement for a wine; in Study 2, 100 college women explored an advertisement for a face cream. In these studies, to operationalize control, we manipulate the potential for control over the *order* of information acquisition, leaving the information content constant. Media richness is operationalized through the addition of audio and video. Our findings show that user control and the interaction between user control and media richness had significant positive effects the creation of telepresence across both studies. Media richness only had a significant main effect in Study 1. In both studies, telepresence was found to have a significant and positive impact on persuasion at both the attribute and product levels. Moreover, the results reveal the process by which this occurs; telepresence is shown to serve as a mediating variable in the relationship between these two media characteristics and attribute and product-level persuasion.

Introduction: The Potential for Virtual Experience

Although much excitement has arisen over the potential for “interactivity” on the Web, very little is understood about *what* exactly creates a sense of interactivity and what impact it has on user behavior. Businesses are spending millions of dollars to add games, animated pictures, and personalization tools to their Web sites, without knowing exactly what effect this has on their customers. Through two experiments, I investigate the critical components of this computer-mediated interactivity and their role in the creation of virtual product experiences. At the same time, I explore consumers’ interpretations of these experiences and the product-based persuasion that results from them.

Media alternatives vary widely in the quality and quantity of product information they can transmit to consumers in comparison to what is generally considered the consumer’s best source of product and service information — direct product experience (i.e., trial).¹ An oft-repeated proverb summarizes the substantive findings of past research in this area, “Experience is the best teacher”(Anonymous). Given that direct product experience is generally the optimal method for consumers to learn about new products, one of the marketer’s goals should be to strive for verisimilitude in indirect communications with consumers.² This research thus focuses on the ability of media to *emulate* experience. The Web, the prototypical digital medium, has the potential to deliver product information in a form such that the receivers may interpret the information more like information obtained from their own direct experience than they do

¹ For brevity, the label products will be used from hereon, but will always refer to both products and services.

² An important stream of research has identified conditions under which direct product experience fails us (see Wright and Lynch 1995; Hoch and Deighton 1989). The current research attempts to show that, even under these conditions, a virtual product experience would be superior to traditional one-way advertising communications.

advertising from traditional sources. This study expands on the stream of research that compares advertising and direct experience as alternative communication methods, re-casting these two alternatives as the *ends of a spectrum* of mediated communications. The technological capabilities of the medium determine where a given medium falls on this spectrum. In essence, the following quotation may better summarize the premise of this research, “Technology is a way of organizing the universe so that man doesn't have to experience it” (Max Frisch).

While today’s Web browsers, programming languages, and limited bandwidth do not yet allow widespread use of the cutting-edge elements of what software engineers label “virtual reality,” a sense of “being there” or presence can still be created in computer-mediated environments. Indeed, it has been found that technology need not be very advanced for this to happen, as Reeves and Nass (1996, pp.8, 11) discovered in a series of experiments on human responses to computers:

Even the simplest of media are close enough to the real people, places, and things they depict to activate rich social and natural responses. Many of our studies generate these responses with rather pathetic representations of real life: simple textual and pictorial material shown in garden-variety technology . . . Mediated life equals real life . . . [There exists] a critical human tendency to confuse what is real with what only *seems* to be real.

In order to describe this perception of the realism of a computer-mediated experience, this research utilizes the construct of *telepresence*, which can be simply described as a sense of presence in a mediated environment Steuer (1992, p.75) explained, “Presence refers to the *natural* perception of an environment and *telepresence* refers to the *mediated* perception of an environment ” Lombard and Snyder-Duch’s (2001) definition focuses explicitly on the role of technology in creating telepresence:

Psychological state or subjective perception in which even though part or all of an individual's current experience is generated by and/or filtered through human-made technology, part or all of the individual’s perception fails to accurately acknowledge the role of technology in the experience.

The construct has its roots in the field of psychophysics, where research has focused on the impact of telepresence on medical, flight, and other technical simulations (see Schloerb 1995). In the communications field, a number of researchers have explored how telepresence is created through combinations of media capabilities (Kim and Biocca 1997; Sheridan 1992; Steuer 1995;). The role of telepresence in consumer response to virtual product experiences in computer-mediated environments has not been investigated in detail.

This research attempts to do this through the exploration of two critical media characteristics that enable telepresence in computer-mediated environments: (1) user control and (2) media richness. The potential for user control was chosen as the operationalization of interactivity because it is a critical element of “interactivity,” as will be discussed in detail below. In addition, it is controllable by the marketer on the Web (Ariely 2000). Media richness represents the sensory breadth (number of communication channels) and depth (quality within each channel) of the stimuli. As the degree of telepresence increases, the more similar the mediated experience will be to an actual direct product experience. Direct product experiences have been shown to lead to stronger beliefs and attitudes than advertising (Berger and Mitchell 1989; Marks and Kamins 1988; Smith and Swinyard 1988; Wu and Shaffer 1987). Thus, when a state of telepresence is created in a persuasive communication, marketers may expect consumers to develop more intense attitudes and beliefs toward the product and its attributes than they would in a more mediated communication experience, such as that typically engendered by television or print advertisements.³

³ Note that this says nothing about the direction of the attitudes, but only the intensity. Telepresence may indeed lead to more negative attitudes and beliefs if the content is interpreted by consumers as negative.

The two main objectives of this research are thus to understand how telepresence is created and how it affects consumer response to computer-mediated communication.

Specifically:

1. How do media richness and user control influence an individual's sense of telepresence?
2. Can the construct of telepresence be measured and used to explain the impact of the CME on consumer response to product advertising?

The conceptual model of the proposed framework is shown in Figure 1.

INSERT FIGURE 1 ABOUT HERE

In the next section, the relevant literature is reviewed and the key constructs are defined. Next, the hypotheses are presented. In the following sections, the two studies are presented and the results discussed. Finally, I conclude with a summary and ideas for future research.

Key Constructs: Literature Review

Interactivity

This section describes precisely what interactivity is and why it is important in our understanding of consumer responses to different media. As a descriptive characteristic of media, interactivity is not related to technology, despite its growth in popularity as a metaphor for computer-mediated communication. Before the birth of the Web, Blattberg and Deighton (1991) discussed the impact of “addressable” and “interactive” media (which, at that time, included kiosks and interactive television prototypes) on marketers’ relationships with consumers. Most discussions of interactivity since then have revolved around the effect of the new technological capabilities on the ease and cost of providing consumers with immediate response. But, in discussing the *effects* of this interactivity, the focus has been on marketer’s business models.

That is, we speak about what the new interactive technologies will allow marketers to do with respect to customer acquisition and retention, but we know very little about the specific mechanisms by which interactivity influences an individual consumer's reactions to marketing communications. To accomplish this, Steuer's (1992, p.84) definition of interactivity is adopted here: "The extent to which *users can participate in modifying the form and content of a mediated environment in real time*" [italics added]. In the sections that follow, we deconstruct this definition in order to understand its critical components.

Mediated Communication Environment

A mediated communication environment is an information environment where sender and receiver do not exchange communications directly between each other but through a medium. Because a medium's capabilities as an information conduit influence the effectiveness of the transmission of messages, the medium can facilitate, distort, or interfere with communication. The level of mediation represents the amount of intervention (bias or noise) between the sender and receiver; it is a continuous variable with the lowest level of mediation being direct face-to-face communication.

As the level of mediation increases, the role of the medium and the mediation process itself become less transparent. For example, communication over the telephone is generally regarded as relatively unmediated: one feels as if one is communicating directly with the party at the other end, despite having to talk into a mouthpiece. However, placing this same "phone call" using an Internet telephony application leads to a very different communication environment. The response lag and lack of voice clarity on the Internet create a higher level of perceived mediation than a similar phone call over traditional phone lines. One is more aware of the medium's role in the communication transfer. When we receive a written letter from the same

individual, the perceived level of mediation increases even further, all else being equal.

In this vein, for a product, mediated experiences would be those in which one's contact with the product occurs through another medium, which may be a person (e.g. word of mouth) or communication vehicle (e.g., television advertisement). On the other hand, *unmediated* experiences are those in which one interacts directly with the product (e.g., product consumption). Wherever people are removed from physical contact with an object, their interaction with this object is less "direct" and is influenced by the medium through which the contact occurs. The importance of this concept of mediation lies in its observed influence on how consumers respond to mediated environments as reflected in their attitudes and behavior, as will be discussed below.

Interactivity as Control

Modification of the form and content describe the two methods by which interactivity may be operationalized. The phrase *user participation* suggests at least some amount of user input in the modification process. A number of other researchers have conceptualized interactivity as embodying user control. For example, Lombard and Snyder-Duch (2001) propose that interactivity has five critical components: number of inputs acceptable; number and type of characteristics that are modifiable; range of response possible; speed of response; degree of correspondence between input and response. It appears that all of the items, except "speed of response," are what we would classify as elements of control. Lombard and Snyder-Duch (2001) explain: "Central to the idea of interactivity is the concept of control, either of elements of the physical world or of information." Control over content includes control over the amount of information presented and over the actual composition of that information. Control over form includes control over the sequence, organization, pattern and timing of information presentation.

Note also that specific Web capabilities, such as customization, can be subsumed under this term of user control, since the essence of both is in the transfer of control to the user.

In a recent experimental study, Ariely (2000) moves away the vague construct of interactivity, focusing instead on the more specific aspects of user control. He also studied some of the same aspects of user control over information flow as this research examines, but focused on the performance effects. Ariely found that control had positive effects due to the importance of “dynamic heterogeneity,” defined as “the changing needs for information during the information acquisition process itself (p.234).” At the same time, control had negative effects due to the additional resources needed to exercise control. This held whether decision performance was measured against others’ preferences through an agent task or against the individual’s own preferences. The studies presented here do not explore decision quality in any normative sense, but focus instead on the *potential for persuasion prior* to decision-making that results from differences in levels of user control.

Media Richness

The second critical media characteristic under study here is media richness, a term coined by researchers in the communications field in their attempt to explain differences among the growing number of alternative media from the user's perspective. Steuer (1992, p.75) defined this media characteristic as:⁴

Representational richness of a mediated environment as defined by its formal features; that is, the way in which an environment presents information to the senses ... stimulus driven, depending entirely upon technical characteristics of a medium.

⁴ Steuer (1992) actually labeled this construct vividness. In this work, I substitute the label “media richness” for two reasons: (1) to use a term that is descriptive of the phenomenon and (2) to avoid confusion with the different use of the term “vividness” in marketing (see Kisielius and Sternthal 1986 and Pham et al. 2001)

The basis for hypothesizing that the richness of a medium will influence user perception of the environment lies in the ability of a media-rich environment to diminish user perception of mediation.

Media richness embodies two core characteristics of the communication medium: sensory breadth and depth (Steuer 1992). Sensory breadth describes the number of different sensory channels that a medium utilizes (e.g. aural, olfactory, visual). Thus, multimedia communications have greater breadth than single media communications (e.g., television versus radio). The greater the number of sensory channels, the greater is the likelihood of immersion in the mediated environment (Lombard and Ditton 1997). In the real world, we use all five senses in our experiences. The verisimilitude of a mediated representation will thus be related to the number of our sensory channels that can be engaged.⁵ Depth refers to the resolution or quality of the information transmitted to the senses. A good example is the range of monitor resolutions currently available. A 17” computer monitor with 800 x 600 resolution has greater depth than a 17” monitor with only 600 x 400 resolution. In discussing HDTV, Reeves, Detenber and Steuer (1995, p.2) explained:

The reason that realistic pictures and sound may be processed as natural experience is that our bodies cannot afford to mistakenly dismiss a picture as inconsequential, even if nothing will jump from the screen.

Together, these two characteristics — breadth and depth — can be envisioned as the *enablers* for the transmission of vivid or more realistic messages.

⁵ The use of multiple channels within one sense would, however, present the possibility of sensory overload and would be expected, at some point, to impede information processing and thus have a negative effect on the user experience.

Attitude Formation via Alternative Media

In a seminal article on attitudes, Fazio and Zanna (1981) argued that the method of acquiring information is a moderator in the attitude-behavior link. In a series of experiments, Fazio and Zanna (1981, 1987) showed that beliefs, and the resulting attitudes, formed from direct product experience are different in a number of important ways; they will be stronger, more clearly formed, more persistent, more confidently held, more accessible, more stable, and exhibit higher attitude-behavior consistency.⁶ Table 1 contains a summary of the most relevant studies comparing the primary effects of advertising and direct product experience on attitudes. In general, across all measures, it has been found that advertising is an inferior communication method to direct product experience.⁷ The only exception to this generalization was the research by Wright and Lynch (1995) who found that advertising was actually a superior communication vehicle than direct experience for *search* attributes, but inferior for experience attributes.

INSERT TABLE 1 ABOUT HERE

In sum, this research consistently shows that direct product experience engenders stronger beliefs and attitudes overall than advertising. Thus, experiences which “mimic” real product experiences would be likely to engender the same effects. The next sections discuss how such virtual experiences are created and assessed.

⁶ The Integrated Information Response model (IIRM) is the underlying model of attitude formation on which these propositions rest. The IIRM is derived from the theory set forth by Anderson (1971). Smith and Swinyard (1982, 1988) applied this theory to deepen our understanding of the process by which consumers weight information from alternative sources. It is important to note that this is a non-valenced approach in that the measures focus on intensity rather than direction of attitudes (Raden 1985).

⁷ Another stream of research has explored the interaction between advertising and experience (Deighton 1994; Hoch and Ha 1986), but these will not be discussed in detail here as we are concerned with isolating single experiences rather than multi-exposure integration.

Telepresence

The only research identified that explored telepresence in a product learning environment was work done by Kim and Biocca (1997), who studied both the determinants and effects of telepresence in the context of a television advertisement for a consumer good. They manipulated the level of “sensory saturation” by increasing the amount of sensory input from the virtual environment and decreasing the amount of input from the physical one. Kim and Biocca found that telepresence was composed of two factors, which they labeled arrival (feeling of being in another environment) and departure (feeling of leaving the physical one), based on a factor analysis of an 8-item telepresence scale. This is somewhat problematic because the three items loading on the departure factor were the only three negatively worded items. Research has shown a strong tendency for negatively worded items to load separately, to the detriment of the unidimensionality of the scale (Herche and Engelland 1996), an issue that will be explored further below. The authors also found that neither of the sensory manipulations influenced departure or arrival, suggesting that the differences in the media factors were insufficient to create differences in telepresence. Overall, the study offered few conclusive results with regard to the impact on memory and persuasion. Kim and Biocca (1997, p.11) explained the failure of the results in the television environment:

Telepresence in the context of non-interactive television viewing can make a viewer only a spectator who is present in the mediated environment . . . So ‘being there’ as a spectator is not the same as ‘being there’ as an actor.

This suggests that the transfer of control to the user — enabling him to become an actor — is a necessary condition for the creation of a sense of telepresence.

Hoffman et al. (2000) studied telepresence through a large-scale survey asking individuals to retrospectively evaluate their experiences on the web in order to investigate the

antecedents and consequences of flow.⁸ Using structural equation modeling, the authors identified both telepresence and perceived control as antecedents to flow. However, they did not conceptually or empirically investigate any direct relationship between perceived control and telepresence.

While telepresence is most often measured as a continuous variable, it is important to recognize that there may be some minimum level necessary for telepresence to have a significant effect on consumer response. For example, while television is a rich media environment, it offers little control to consumers and thus the level of telepresence induced in a product advertisement may not be high enough to enable what we would consider a “virtual experience.” Kim and Biocca’s findings also support the idea that *both* media richness and user control are necessary to create a sense of experience illusion of direct product experience – strong enough to influence consumer attitudes towards a product.

Hypotheses

Creating Telepresence

While researchers in psychophysics have measured telepresence with various physiological responses such as task performance (Schloerb 1995), reflexive responses (Sheridan 1992), and discriminant ability (Sheridan 1996), researchers in the communications field have relied on multi-item scales to measure reported feelings of telepresence. This research uses a variation of the 7-item scale employed by Kim and Biocca (1997) and Hoffman et al. (2000).

⁸ Hoffman and Novak (1996, p.50) define flow as "the state occurring during network navigation which is: 1) characterized by a seamless sequence of responses facilitated by machine interactivity, 2) intrinsically enjoyable, 3) accompanied by a loss of self-consciousness, and 4) self-reinforcing."

As discussed above, earlier research proposes that telepresence is partially driven by the level of “sensory immersion” in the mediated environment (Kim and Biocca 1997). The greater the level of sensory input coming from the mediated environment, the more likely it is that the user will forget the intervention of the medium and perceive the experience as less mediated.

H1: As the level of media richness in a computer-mediated environment increases, the level of telepresence experienced will increase.

As discussed above, user control is recognized as a critical element of interactivity. At the same time, control is a critical aspect of direct product experience; we choose how to interact with the product. Thus, in a mediated experience, the greater the level of control we have, the more we feel the experience is unmediated.

H2: As the level of user control in a computer-mediated environment increases, the level of telepresence experienced will increase.

It is likely that if either media richness or user control is low, the level of telepresence experienced will be somewhat diminished from the full potential. While viewing an IMAX movie is very high in richness, we may simply feel like observers. At the same time, while the earliest computer text input games allowed a high degree of control, the lack of sensory stimulation, made this more of an intellectual than sensory immersion. In our direct experience with products, both media richness and user control are at their highest natural levels. Thus, when a mediated environment offers both of these characteristics simultaneously, we would expect that the impact on telepresence would be much larger than with only one of the factor levels high, suggesting an interaction effect between user control and media richness.

H3: The sense of telepresence created under conditions of both *high user control* and *high media richness* is greater than the sense of telepresence under any conditions with low user control *or* low media richness.

Effects of Telepresence

The predicted effects of telepresence on product beliefs and attitudes are derived directly from the predicted effects of direct product experience *relative* to advertising. The higher the level of telepresence, the more real the experience of the virtual environment will seem. The more real the experience, the higher the intensity of the attitudes and beliefs that will result from the experience. As the level of telepresence increases, the more closely the response will mimic the response of an unmediated (direct product) experience.

H4: As the level of telepresence experienced in a computer-mediated environment increases, beliefs about product attributes communicated via advertising will be more strongly held.

H5: As the level of telepresence experienced in a computer-mediated environment increases, the intensity of attitudes towards the advertised products will increase.

Mediation

It is intuitive that telepresence is not an actual cause of increased belief and attitude strength but the *means by which* changes in the media characteristics influence consumer response. Earlier research has provided little insight into how changes in media characteristics or differences between media effect consumer response. Here, we explore the process through which these effects occur.

H6: In a computer-mediated environment, telepresence will mediate the relationship between user control and media richness and: (a) belief strength about product attributes and (b) attitude intensity toward the product.

In the next section, we discuss the study design and procedures for Studies 1 and 2.

Study 1

Product Selection

Wine was selected as the product category for Study 1 primarily because of the importance of experience attributes for the category (see Nelson 1981). That is, wine is comprised of critical experience attributes that could not be completely digitized – smell, feel and taste (Lal and Sarvary 1999). The rationale was that, if we could create virtual experiences for this type of product, then creating virtual experiences for products dominated by search attributes or digitizable experience attributes would be easier because those attributes could be easily communicated through a visual and aural medium. In order to avoid confronting preconceived product attitudes, an unfamiliar brand was selected.

Attribute Generation

Product attributes were first generated from wine periodicals and academic literature on the topic. For example, Solomon (1996) derived a standardized vocabulary for describing wine in his study of the cognitive organization and vocabulary of wine experts. This attribute list was then pared down through four in-depth tastings with small groups of participants. The participants, graduate students at a large northeastern university, were invited to a wine tasting, where each was instructed to write down the attributes she would use in choosing among wines in general, as well as specific descriptions of the wine tasted. Following the individual response period, participants were asked to discuss their responses with the group. This provided elaboration of the written descriptions and highlighted differences among individuals based on expertise. These studies yielded a list of general attributes, from which 12 specific attribute qualities of the selected wine (e.g. woody aroma, cabernet sauvignon grape), balanced equally

among search and experience attributes, were ultimately selected to incorporate into the advertisement (see Table 2).

INSERT TABLE 2 ABOUT HERE

Stimuli

The advertising stimuli were designed using Macromedia's Authorware[®] 3.0 and 4.0. In creating the four different versions (2 media richness x 2 user control) of the stimuli, one of the main goals was to transmit the same core product attribute information across all versions of the stimuli. Pre-testing was conducted with graduate students to ensure informational equivalence across conditions.

The wine selected was Caliterra Cabernet, a little-known Chilean wine that is produced as part of a joint venture by Mondavi and the Chadwick family of Chile, but was not yet widely distributed or advertised in the Northeast at the time of the study. The stimuli were created using advertising and promotional materials provided by Mondavi. The product information in the stimuli was divided into five topical categories (Taste, Aroma, Vineyard, Region, and Reviews), which contained information on the 12 product attributes.

Procedure

Participants were given an introductory sheet explaining that the purpose of the study was to evaluate Internet advertising. In order to disguise the specific nature of the research, the participants were told that this product category was one of a number under study. The guidelines also provided basic instructions about the task and computer operation. At the start of the exercise, participants viewed the main screen shown in Figure 2. From this screen, the high control (low control) participants selected (were led to) a category of information (e.g. aroma)

which they viewed in its entirety. Each category contained 2-3 screens of information, describing a few of the product attributes. After viewing all of the information, participants then were directed back to this main screen, from which they repeated the process until all categories had been seen. Each participant had to view every screen in the stimuli and no one could return to see any information in previous screens again. Data on response latencies, sequences of movements, and time spent on each screen were collected unobtrusively by the computer.

INSERT FIGURE 2 ABOUT HERE

After viewing the main stimulus, the participants then proceeded to the assessment questions. Their responses were also recorded on the computer. The questions covered the following topics in the order indicated: telepresence measures (Table 3); open-ended recall measures, belief strength measures; aided recall and recognition measures; attitude intensity measures; manipulation checks, and wine expertise measures.

INSERT TABLE 3 ABOUT HERE

Design

The study was a 2 (media richness) x 2 (user control) factorial design. Media richness (MR) and user control (UC), were both manipulated between subjects. Media richness was operationalized through the inclusion of audio and video (high richness or HMR) or still pictures and plain text (low richness or LMR). Each of these operationalizations will be discussed below.

User Control.

Control over form but *not* content was manipulated in order to allow comparison of the conditions. That is, it was essential to keep the content as similar as possible across the

conditions in order to compare measures of persuasion. User control was operationalized through the following two manipulations of control over form.

1. *Control over sequence.* “High user control” (HUC) participants had control over the order in which they viewed the categories. These participants could view the categories in any order they desired, but were required to see all before exiting. The subjects in the “low user control” (LUC) condition were guided through the topics in a pre-determined order.⁹

2. *Control over timing.* All participants had control over the timing within the exercise; they chose when to proceed to the next page, by pressing a “continue” button. This was essential in order to prevent the secondary effects of time pressure observed in previous studies (Wright 1974). Thus, control over timing was manipulated primarily in terms of perceptions. Participants in the HUC condition were told there were no time constraints. In the LUC condition, participants were given a time limit for the entire exercise and a clock continually showed the time remaining in the lower corner.¹⁰ However, in order not to create any time pressure in the LUC condition, this time limit was set to 20% longer than the maximum amount of time used in pre-tests.

Media Richness.

Media richness was operationalized via the modality of the medium. In the low richness condition, participants were exposed to text and still pictures, with no sound. In the high richness condition, full-motion video and sound were added. This richness manipulation maps partially to

⁹ The orders chosen consisted of two alternative orders that corresponded to the paths chosen by the majority of HUC pre-test participants. Early pretests found that a majority of participants used the order implied by the screen layout – starting in the top left and proceeding clockwise, despite randomization of placement of the categories on the screen. However, no order effects were found. Thus, in the final tests only two randomized orders were used for the LUC participants.

¹⁰ In order to maintain consistency across conditions, a clock was also shown in the HUC condition, but participants were told its only purpose was to keep track of time spent.

existing media, highlighting the differences between the Web and traditional media, such as television and print. Under the HUC condition, the low richness condition is equivalent to the early Web technologies, while the high richness condition is equivalent to the current Web technology. Under the LUC condition, the low richness condition is similar to print (with the constraint of reading the pages in the order given), while the high richness condition is equivalent to television, with the added ability to pause the play.

The audio consisted of voice-overs and music and was entirely consistent with the visual information, but did not provide any additional, factual attribute information in itself. In the low richness condition, identical information was transmitted in text format, rather than through voice-overs. Moreover, all of the voice-over and text information simply reinforced the information displayed visually in order to minimize overload effects (Lang 1995). Lombard and Ditton (1997) also found that the greater the consistency of the message across sensory channels, the greater the likelihood of immersion.

Dependent Variables

In line with previous research comparing the effects of direct product experience and advertising, persuasion is measured in two different ways here: beliefs and attitudes. First, the overall strength (or intensity) of the beliefs in the attribute claims made in the advertising is assessed.¹¹ Strength of attitudes is assessed with measures of attitude intensity (Raden 1985). A sample of the belief and attitude strength questions, respectively, is shown below:

¹¹ We will label this belief intensity "belief strength" in order to be consistent with the way it is usually labeled, recognizing that it is actually only one category of a broader construct of belief strength.

How strongly do you believe that this wine has an EARTHY aroma?

Not Strongly At All Extremely strongly
1.....2.....3.....4.....5.....6.....7

Please rate your overall impression of this wine.

Unappealing Appealing
1.....2.....3.....4.....5.....6.....7

Participants

One hundred and forty people participated in Study 1. Individuals were recruited through colleges and universities in a northeastern metropolitan area. Given the product category, all subjects were required to be over 21 years of age; most were university staff members (42% female). One hundred and six of the subjects were recruited to participate in an “Internet Wine Advertising Study” whereby they would receive compensation of \$20 for a 45-minute lab exercise and a follow-up survey via e-mail. The ad explicitly stated that wine expertise was not necessary. Subjects signed up for an open time slot and were then randomly assigned to one of the four treatment conditions. The number of subjects participating in a session varied from 2 -8. The physical arrangement of computers within the behavioral lab prevented subjects from viewing others’ screens, thereby assuring independence of subjects’ responses. The remaining 34 participants were recruited from a university alumni club as part of a club event and were not paid. Instead, they received a guest lecture on Internet marketing following the sessions. The responses of these two groups on the measures of interest were not significantly different from one another. As such, all data have been combined.

Manipulation Checks

In order to verify that the manipulation of user control was effective, participants were asked how much control they had over their navigation in the exercise, over the sequence of items they saw, and in total, using a 7-point Likert scale with endpoints labeled “No control at

all” and “Extremely high degree of control.” All of the differences on these three questions between the LUC and HUC conditions were significant ($p < .001$ for navigation and sequence, $p < .01$ for total control). Interestingly, participants in the HUC condition reported having significantly greater control over the information content ($p < .001$) and control over customization ($p < .01$) than those in the LUC condition although there was no difference in content. One can infer from this that perceptions of control may be broader than and easier to influence than they actually are.

For the media richness manipulation checks, subjects were asked to rate the level of media richness and the level of multimedia, using a similar 7-point Likert scale. Both measures yielded significant differences ($p < .001$) between the high and low richness conditions.

Study 1 Results

The 7-items that comprised the telepresence scale yielded an alpha of .836. Factor analysis yielded only one factor with an eigenvalue greater than one, suggesting a unidimensional scale. To calculate the telepresence score, I thus took a mean of the seven items. To evaluate the impact of media richness and user control, a two-way ANCOVA was conducted with telepresence as the dependent variable, and ad credibility included as a covariate.¹² This credibility measure was included to take into account individual differences that might influence the perceived credibility of the computer-mediated advertisement. These differences might include familiarity with the medium, expertise in the category¹³ (Ford, Smith and Swasy 1990),

¹² Credibility was assessed through the following question: “Please rate how credible you find the overall Caliterra advertisement.” Responses were given on a 7-point Likert scale, anchored by “Not credible at all” and “Extremely credible.”

¹³ The level of category expertise might also influence the segmentation of attributes into search and experience, and, hence, the reliability of any inferences consumers could make about the correlation between ad claims and product benefits (See Alba et al for a discussion of this.)

perceived source credibility (Stern 1994) or general skepticism of advertising (Calfee and Ringold 1994). Since no attempts were made to control for credibility differences, it was included as a covariate. The ANCOVA yielded a significant main effect for both media richness ($F=12.12, p<.001$) and user control ($F=14.54, p<.001$), supporting H1 and H2 that higher levels of media richness and user control, respectively, would result in higher levels of telepresence. The interaction effect between media richness and user control predicted by H3 was marginally significant ($F=2.13, p<.10$). The covariate, credibility, was also significant, $F=17.44, p<.001$).

With respect to the second set of hypotheses regarding the *effects* of telepresence, we find strong support for both H4 and H5, which predict that higher levels of telepresence will result in stronger beliefs and attitudes. To assess belief strength, we averaged the belief strength scores for each of the 12 attributes mentioned in the advertisement. The 12 belief items had an alpha of .76. To assess attitude intensity, we used the mean score from four questions regarding attitude toward the product. These responses to these questions yielded an alpha of .96. Using regressions with the average belief and attitude scores as dependent variables, we find telepresence to have a positive and significant effect for both ($F= 5.02, p<.001$) for beliefs, and $F=4.34, (p<.001)$ for attitudes.)¹⁴

In order to study mediation parsimoniously, a “realism” index of the four separate conditions was created. Since there are few expectations on the differences between the “mixed” scenarios where either media richness or user control is low, it is useful to think of the four different scenarios as separate states of the world. That is, we can look at the 2x2 table formed by cross-tabulating MR and UC as four separate types of environments, which can be used to create

¹⁴ A MANOVA with both dependent variables yielded similar results with the telepresence having a significant effect on both beliefs ($F=1.68, p<.05$) and attitudes ($F=1.77 (p<.01)$)

a new variable labeled “realism.” The highest level of “realism” (2) is one with high user control and high media richness (HUC/HMR), while the lowest level (0) is one with low user control and low media richness (LUC/LMR). The middle level (1) incorporates the low control/ high media richness (LUC/HMR) and high control/low richness states (HUC/LMR). This new variable “realism” was used in place of the user control and media richness independent variables to test for mediation effects. Using the Baron and Kenny (1986) method, mediation is tested by assessing the effect of realism on the mediator (telepresence) and on the dependent variable (attitudes or behavior), with and without including the mediator. As Table 4 shows, we find that telepresence mediates the relationship between attitudes and realism and beliefs and realism, fully supporting H6. We find perfect mediation by telepresence for beliefs, with realism losing significance completely ($p > .65$) when the telepresence variable is added. For attitudes, we also find perfect mediation, although realism has only marginal significance alone in the regression ($p < .10$).

INSERT TABLE 4 ABOUT HERE

Overall, the results from Study 1 suggest that media richness and user control are significant enabling factors for the creation of telepresence. However, it does not seem necessary for *both* factors to be at high levels to create this sense of telepresence; no significant interaction effect is observed. In addition, in contrast to Kim and Biocca’s findings, the media richness manipulation alone had a significant influence on telepresence. Moreover, as predicted, higher levels of telepresence lead to stronger beliefs in advertised product claims and more intense attitudes toward the advertised product. Finally, the results support the proposition that telepresence works as a mediating factor between the media characteristics and the consumer

response. In order to strengthen the external validity of these findings, I sought to replicate this study in another “experiential” product category in Study 2.

In addition, order to test further the robustness of the telepresence scale, a minor modification was made for Study 2. Recall that Kim and Biocca (1997) had observed a two-dimensional telepresence scale in their study, whereas the scale in Study 1 proved to be unidimensional. In Study 2, two of the items (numbers 2 and 6, as shown in Table 3) were negatively worded. In addition, one of the two items reversed in Study 2 was a different one than any of the three reversed in the Kim and Biocca study.¹⁵ Comparing the results of these three scales would allow us to assess whether the dimensionality differences were a result of the negative coding itself or of true underlying multidimensionality.

Study 2

Product Selection and Attribute Generation

This product category, face cream, is dominated by a different set of sensory attributes — feel and smell. However, like wine, these sensory attributes were not digitizable. In order to generate the product attributes for the face cream, a similar procedure was used to that described above for wine. A general attribute list was generated and then pared down through three in-depth product trials with small groups of female graduate students at the Harvard University. Only women were used in this study due to the nature of the product category. These pre-studies yielded a list of 12 specific attributes to be communicated in the advertisement, again equally balanced among search and experience attributes (Table 5).

¹⁵ Item 6 was never reversed in the Kim and Biocca study.

INSERT TABLE 5 ABOUT HERE

Stimuli, Design, and Procedures

The advertising stimuli were designed using Macromedia's Authorware[®] 4.0. Again, in creating the four different versions (2 media richness x 2 user control) of each of the stimuli, we strove for informational equivalence across conditions; this was confirmed through pre-tests. For the face cream, the product used was the *Exuviance* line of facial creams, created by a NeoStrata. The products are relatively expensive and sold exclusively through dermatologists so there was not widespread awareness.¹⁶ All of the materials for the stimuli were created using advertising and promotional materials provided by the company. The product information was divided into six topical categories (How it feels, How to use it, Aromas, Ingredients, About the company, and The product line), which contained the information on all 12 attributes. A snapshot of the main screen is shown in Figure 3. The experimental design and procedures were identical to those described for Study 1, except as noted.

INSERT FIGURE 3 ABOUT HERE

Participants

In this study, only women were used and no age restrictions were set. One hundred people participated in Study 2. Staff and students were recruited through colleges and universities in a northeast metropolitan area. Once again, subjects were recruited to participate in an "Internet Advertising Study" whereby they would receive compensation of \$15 for a 45-

¹⁶ No one in the study recognized the brand name or company.

minute lab exercise and for completing a follow-up survey via e-mail.¹⁷ Subjects signed up for an open time slot and were then randomly assigned to one of the four treatment conditions. Session participation ranged from 12 –20 people per session, using the same lab set-up as described in Study 1. In Study 2, assessment of expertise consisted of one question asking for a self-assessment of skin care category expertise.

Manipulation Checks

Participants were asked the same questions about the perceived level of control as in Study 1. We find the expected differences in perceived control over navigation ($p < .001$), sequence ($p < .001$) and total control ($p < .05$). We also observe a significant difference in perceptions of control over content ($p < .001$) and a marginally significant difference for customization ($p < .10$). Two additional questions were asked regarding perceptions of control: the breadth of control and the depth of control using similar 7-point Likert scales. For both of these questions, participants reported significantly greater perceived control in HUC conditions ($p < .001$). This further demonstrates the expanded perceptions of control that are achieved merely by giving the subjects the control over sequence.

For the media richness manipulation checks, subjects were asked to rate the level of media richness and the level of multimedia on 7-point Likert scales. Again, both measures yielded significant differences ($p < .001$).

¹⁷ The amount offered was lower for this sample because we were able to recruit from a younger population. The \$15 payment was closer to the market rate for such studies.

Results

Hypothesis Tests.

The negative scoring of two items, as described above, had a small negative influence on the reliability of the telepresence scale, which will be discussed below. However, the alpha was still an acceptable .78. To test the determinants of telepresence (H1 –H3), a two-way ANCOVA with credibility as a covariate was conducted. Here, we find no support for H1; media richness had no main effect on telepresence ($F=.47, p<.50$). User control had a positive and significant effect ($F=3.44, p<.05$) on telepresence, providing strong support for H2. The interaction effect between user control and media richness (H3) was also positive and significant ($F=4.01, p<.05$). The covariate, credibility, was also significant ($F=11.90, p<.001$).

With respect to the effects of telepresence, we find a significant and positive effect of telepresence on belief strength ($F= 3.94, p<.001$) and attitude strength ($F=3.64, p<.001$). Again, using Baron and Kenny's method (1986), we find significant mediation effects between realism and attitudes and beliefs as shown in Table 6. We observe perfect mediation for attitudes, but only partial mediation for beliefs, whereby realism remains significant ($p<.05$), although its coefficient falls from .24 to .17, when telepresence is added as a predictor to the regression equation.

INSERT TABLE 6 ABOUT HERE

Telepresence Scale

The results of the modified telepresence scale merit further discussion. A factor analysis of this second scale (with items 2 and 6 negatively worded) reveals that the reversed factors load separately. This second factor explains 23% of the total variance, while both factors explain 62%

(versus 51% for the 1 factor Study 1). Interestingly, as briefly mentioned above, Kim and Biocca's scale also yielded two factors; the second factor was composed solely of the three items that were reverse scaled. However, in our scale, a *different* set of items was reversed, and we find similar results. In fact, we find that the average score for items 2 and 6 (after reverse coding) was significantly lower ($p < .001$) in Study 2 than in Study 1. However, without the two negatively worded items there is no significant difference between the telepresence scores for the two studies ($F = 1.20, p < .30$).

These findings suggest that the two factors observed in Study 2 and in Kim and Biocca's study may not represent two elements of the construct telepresence but simply reflects the effects of negative wording. Such effects have been well documented (Friedman 1998; Herche and Engelland 1996). Herche and Engelland's studies have shown a significant tendency for reversed-polarity items to load independently, compromising the unidimensionality of the scale. In addition, Friedman (1998) found that positively worded or "favorable" scales yielded significantly different mean results from "mixed" positive and negatively worded scales and negatively worded or "unfavorable" scales. Specifically, means for scales with mixed or only negative items were significantly lower than means for all positively worded scale, which may explain the difference in overall mean telepresence scores between Study 1 (3.84) and Study 2 (3.49, $p < .05$). Overall, however, lower means for mixed scales is not a fundamental problem; in fact, one could argue that this works against the inflation of all positively worded scales that might be a result of response bias (Churchill 1979). If we combine the data from our two studies and do a composite factor analysis of the telepresence scale, we find only one factor which explains 48% of the total variance, suggesting that the effects of the negative wording are relatively weak in a larger sample.

Summary

Thus, overall we again find strong support for our hypotheses relating to both the influences on and effects of telepresence. We also find support for the role of telepresence as a mediating variable. Moreover, in Study 2, we are able to isolate some specific problems with variations of the telepresence scale, which should help in the future refinement of the measurement scale. Below, some overall comparisons and contrasts between the two studies will be discussed.

General Discussion

One important point to explore is why media richness had no significant main effect in Study 2 . Further exploration and qualitative testing of the two operationalizations suggests a stronger media richness manipulation in Study 1 than in Study 2. That is, the media richness manipulations were operationalized slightly differently in the two studies. In Study 1, the stimuli featured one individual, Oz Clarke, an animated wine critic with an Australian accent, who “narrated” throughout.¹⁸ In addition, the stimuli featured two other pictures (LMR) or videos (HMR) of interactions among people. In contrast, in Study 2, the stimuli did not feature a narrator. The only real people were still pictures of faces with different hair and make-up styles. The videos were of scenery, flowers and herbs, and sketched faces applying cream. In Study1, it is possible that the animation with voice-overs of one lively character was a more powerful manipulation of media richness than the animation of other types of pictures.¹⁹ The inclusion of

¹⁸ A question in the post-exposure questionnaire asked if anyone recognized the man, but not one subject reported knowing him.

¹⁹ This may have created some type of “parasocial interaction” through a mediated personality, wherein the user perceives a social relationship with an actor within a medium. See Hoerner (1999) for a review of this phenomenon.

people enjoying and discussing the product in the videos could be also be responsible for the greater impact of the media richness manipulation overall in the wine category. Exploring the data from the manipulation checks, we find in the low richness condition, there is no difference across samples in perceived “level of media richness” (3.85 for Study 1 versus 3.83 for Study 2, $p > .90$) or in perceived “level of multimedia” (3.24 for Study 1 versus 3.60 for Study 2, $p > .30$). However, for the high richness conditions, participants in Study 1 report significantly higher levels of media richness (5.72 versus 4.87, $p < .001$) and multimedia (5.59 versus 4.94, $p < .001$).

It may be possible to explain the differences by presuming that the wine LMR scenario was not actually as “low” as the LMR for the face cream. In essence, in Study 2, the presence of Oz Clarke as narrator through the still photos may have been enough to raise the level of media richness a small, but significant amount above that of the LMR for Study 1. The studies may thus be taking measurements along different points on the realism spectrum, due to the differences in the operationalizations of media richness. Future research needs to explore the role of such characters and social interaction in the creation of rich media environments.

Although we have noted some differences in the impact of user control and media richness on telepresence, it is important to note that the interaction between user control and media richness was observed in both studies, despite the differences in the operationalizations. This suggests the creation of telepresence may be easier than imagined — a finding that should be reassuring to marketers striving to create virtual experiences without incurring burdensome costs or requiring significant technological expertise.

Importantly, we have not explored the possible influence of involvement in the relationships between media characteristics and consumer response. Indeed, a component of the process through which telepresence influences consumer response may be increased

involvement. In terms of differentiating media according to levels of user control, the differences in the manipulations in Study 1 can be related to Krugman's (1965) characterization of low and high involvement media and McLuhan's (1965) hot/cold distinction. Stewart and Ward (1994, p.333) summarized this work as follows:

Television, in particular, is a low-involvement medium because the rate of viewing and understanding is not controlled by the viewer. In contrast, exposure to print media is under the control of readers, who may pause and make connections between what is being read and personal experiences and attitudes.

. Here, the time spent on the exercise (total time) can be used as a proxy for involvement. We find a positive correlation between the telepresence score and total time spent on the exercise for both Study 1 ($r=.32$, $p<.01$) and for Study 2 ($r=.16$, $p<.10$). The stronger correlation for Study 1 also reinforces the idea of the greater effectiveness of the simulation, as discussed above. However, further research is necessary to explore the precise ways in which involvement and telepresence are related in these computer-mediated environments.

Summary and Future Research Directions

Summary

In summary, we find that user control and media richness had significant positive influences on the creation of telepresence. In turn, telepresence was found to have a significant and positive impact on persuasion, measured at the attribute level and at the product level. Moreover, these studies have been able to isolate the underlying processes by showing that telepresence mediates the relationship between user control and media richness (reclassified in terms of the level of realism of the environment) and persuasion at both levels. Using the construct of realism enabled us to classify the different scenarios as alternative media along a continuum of mediated communications. Our telepresence scale shows strong reliability. In

addition, analysis and comparison of the results of the two scale variations identified some problems with prior scales and identified further lines of research necessary to improve the scale.

While it appears that the creation of telepresence is sensitive to the operationalizations of media richness, it is also apparent that creating a level of telepresence sufficient to have a meaningful effect on beliefs and attitudes is not difficult. Note that the stimuli used in these two studies were quite simple renditions created with off-the-shelf programming tools, not cutting edge, 3D simulations. For practitioners, this should be welcome news. Providing basic virtual experiences may indeed be a lot less expensive than other methods of providing real trial, such as sampling. Although this research does not measure the proximity of these virtual experiences to ones engendered from actual trials, we have shown that these virtual experiences, created by increasing levels of user control and media richness, lead to stronger consumer responses, as measured by beliefs and attitudes, than *less* realistic experiences.

Moreover, in these two studies, virtual experiences were provided for products whose dominant attributes were true (nondigitizable) experience attributes, such that these attributes were in essence transformed into search attributes (Klein 1998). For products dominated by search attributes or digitizable experience attributes (e.g. sound), these virtual experiences should be even easier to provide and should be interpreted as even more similar to direct product experiences.

Limitations and Future Research Directions

This study suffers from several shortcomings. First, only attribute beliefs and product attitudes were measured. In order to fully evaluate the media impact, we would need to study a broader range of persuasion measures, such as: a weighted-attribute belief strength, based on

individual attribute importance weights; longer term impacts of single and multiple virtual experience exposures; and product choice in a decision-making environment.

With a limit of five or six categories and only 12 pieces of attribute information to keep track of, the cognitive load created by this transfer of control was minimal. Ariely (2000) and Lepper and Malone (1987) showed that, under certain conditions, the incremental demand on cognitive resources created by increased control could be detrimental to performance. At some point, this depression of performance may also effect individual's satisfaction with and confidence in the information search process itself, thus negatively impacting the communication's persuasive ability. Heeter (2000, p.12) explains that, "More interactivity is not necessarily good. A poorly designed interface is likely to require more separate interactions and take longer to achieve a sought affordance than a well-designed interface."

In this research, we have examined only one element of user control — control over information acquisition order. We have not yet explored the impact of other types of control over format, such as methods of visual representation or attribute/alternative. Moreover, while we have given subjects control over order of information access, in the real world environment (including the Internet and direct product experience) individuals also have control over the content or amount of information. This type of control may have an even greater impact on both learning and persuasion but has not yet been explored due to the difficulties of maintaining "experimental control" while turning over such "user control" to participants.

These studies have not fully explored the role of credibility or involvement. We have controlled for individual differences in credibility, but we have not explored the source of these individual differences or any possible interaction between the medium and the individual perceptions of credibility. With respect to involvement, further research needs disentangle the

roles of telepresence and involvement and explore directly the relationship of these constructs to one another. All of these issues can be investigated through direct manipulation of these variables.

Finally, we cannot make conclusive managerial recommendations without first mentioning the importance of fit between individual information processing styles and aptitudes and the media environment. First, individuals have been shown to differ according to whether they are verbal or visual processors (Childers and Houston 1984). Clearly, video representations will affect individuals differently depending on their preference for visual processing. Secondly, the amount of control that is optimal, or even beneficial, is likely to depend upon the individual's level of expertise. The greater the level of category expertise, the more capable the individual is in managing the information gathering and assimilation tasks. That is, they know what to do with control when it is given to them. For example, Carlson and Klein (2001) found that individuals with greater expertise were better able to structure their virtual experience to mimic a direct product experience. Finally, we might expect that certain personality traits, such as the "desire for control" (Burger 1992) or locus of control (Hoffman, Novak, and Schlosser 2000), would be positively correlated with an individual's choice of whether to actively exercise control when options are available.

The 7-item telepresence scale successfully measured both the causes and effects of telepresence. However, we can improve its construct validity by improving construct convergence and divergence. For convergence, it would be necessary to remove mono-method bias by assessing telepresence in additional ways. One possible method would be to record physiological responses to the stimuli (Schloerb 1995). In our advertising stimuli, measures such as hunger, heart rate, or body language might be appropriate ways to measure the "sense of being

there.” Divergent validity can be more easily improved by collecting measures of related constructs such as involvement and flow, which have been claimed to be related to telepresence (Hoffman and Novak 1996), but have not been precisely measured in relationship to it.

This study answers a number of key questions about consumer response to advertising in the new media. We have demonstrated a novel way of operationalizing control and media richness in a computer-mediated environment, and of measuring the role of telepresence in the process. A systematic program of research exploring the impact of the many facets of control and combinations of modalities on different types of individuals is necessary before we can be confident in our understanding of the impact of the new media on consumer behavior.

References

- Alba, Joseph, John Lynch, Barton Weitz, Chris Janiszewski, Richard Lutz, Alan Sawyer, and Stacy Wood (1997), "Interactive Home Shopping: Consumer, Retailer, and Manufacturer Incentives to Participate in Electronic Market Places," *Journal of Marketing*, 61 (3), 38-53.
- Anderson, Norman H. (1971), "Integration Theory and Attitude Change," *Psychological Review*, 78 (3), 171-206.
- Ariely, Dan (2000), "Controlling the Information Flow: Effects on Consumers' Decision Making and Preferences," *Journal of Consumer Research*, 26 (September), 233-48.
- Baron, Reuben M. and David A. Kenny (1986), "The Moderator-Mediator Variable Distinction in Social Psychological Research," *Journal of Personality and Social Psychology*, 51 (6), 1173-82.
- Berger, Ida and Andrew A. Mitchell (1989), "The Effect of Advertising on Attitude Accessibility, Attitude Confidence, and the Attitude-Behavior Relationship," *Journal of Consumer Research*, 15(4), 269-79.
- Burger, Jerry M. (1992), *Desire for Control: Personality, Social, and Clinical Perspectives*. New York: Plenum Press.
- Calfee, John E. and Debra Jones Ringold (1994), "The 70% Majority: Enduring Consumer Beliefs About Advertising," *Journal of Public Policy and Marketing*, 13 (2), 228-41.
- Carlson, Kurt A. and Lisa R. Klein (2001) "Predecisional Distortion in Real Choice," Cornell University, working paper.
- Childers, T. L., & Houston, M. J. (1984). Conditions for a Picture-Superiority Effect on Consumer Memory. *Journal of Consumer Research*, 11, 643-654.
- Blattberg, Robert C. and John Deighton (1991), "Interactive Marketing: Exploiting the Age of Addressability," *Sloan Management Review*, 33 (1), 5-14.
- Fazio, R.H. and P. Zanna (1987), "On the Predictive Validity of Attitudes: The Roles of Direct Experience and Confidence," *Journal of Personality*, 46, 228-43.
- _____ (1981), "Direct Experience and Attitude-Behavior Consistency," in *Advances in Experimental Social Psychology*, L. Berkowitz, Ed. Vol. 14. New York: Academic Press.
- Ford, Gary, Darlene B. Smith, and John L. Swasy (1988), "An Empirical Test of the Search, Experience and Credence Attributes Framework," in *Advances in Consumer Research* Vol. 15. Provo, UT: Association for Consumer Research.
- Friedman, Hershey H. (1998), "The Effects of Positive and Negative Wording on Responses to a Likert Scale," *Applied Marketing Research*, 28 (2).
- Heeter, Carrie (2000), "Interactivity in the Context of Designed Experiences," *Journal of Interactive Advertising*, 1 (1), 1-16.
- Herche, Joel and Brian Engelland (1996), "Reversed-Polarity Items and Scale Unidimensionality," *Journal of the Academy of Marketing Science*, 24 (4), 366-374.

- Hoch, Stephen J. and John Deighton (1989), "Managing What Consumers Learn from Experience," *Journal of Marketing*, 53 (April), 1-20.
- _____ and Young-Won Ha (1986), "Consumer Learning: Advertising and the Ambiguity of Product Experience," *Journal of Consumer Research*, 13, 221-34.
- Hoerner, John (1999), "Scaling the Web: A Parasocial Interaction Scale for World Wide Web Sites," in *Advertising and the World Wide Web*, eds. Schumann, David W. and Esterh Thorson, New Jersey: Lawrence Erlbaum Associates., 135-147.
- Hoffman, Donna L., Thomas P. Novak, and Ann Schlosser (2000), "Consumer Control in Online Environments, working paper, available: <http://www2000.ogsm.vanderbilt.edu/papers.html>.
- _____ and Y.F. Yung (2000), " Measuring the Flow Construct in Online Environments: A Structural Modeling Approach," *Marketing Science*, 19(1), 22-42.
- _____ and Thomas P. Novak (1996), "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations," *Journal of Marketing*, 60 (3), 50-69.
- Kim, Taeyong (1996), "Effects of Presence on Memory and Persuasion," , University of North Carolina, Chapel Hill.
- _____ and Frank Biocca (1997), "Telepresence Via Television: Two Dimensions of Telepresence May Have Different Connections to Memory and Persuasion," *Journal of Computer-Mediated Communication*, 3 (2).
- Kisielius, Jolita and Brian Sternthal (1986), "Examining the Vividness Controversy," *Journal of Consumer Research*, 12, 418-31.
- Klein, Lisa R (1998), "Evaluating the Potential of Interactive Media Through a New Lens: Search versus Experience Goods. *Journal of Business Research*. 41(3), 195-203.
- Krugman, H.E. (1965), "The Impact of Tv Advertising: Learning without Involvement," *Public Opinion Quarterly*, 29 (Fall), 349-56.
- Lal, Rajiv., & Sarvary, Miklos. (1999), "When and How Is the Inetrnet Likely to Decrease Price Competition?" *Marketing Science*, 18(4), 485-503.
- Lang, A. (1995), "Defining Audio/Video Redundancy from a Limited-Capacity Information Processing Model Perspective.," *Communication Research*, 22 (1), 86-115.
- Lepper, Mark R. and Thomas W. Malone (1987), "Intrinsic Motivation and Instructional Effectiveness in Computer-Based Education," in *Aptitude, Learning and Instruction*, R.E. Snow and M.J. Farr, Eds. Hillsdale, NJ: Erlbaum.
- Lombard, Matthew and Snyder-Duch (2001), "Interactive Advertising and Presence: A Framework," *Journal of Interactive Advertising*, 1 (2).
- _____ and Teresa Ditton (1997), "At the Heart of It All: The Concept of Telepresence," *Journal of Computer-Mediated Communication*, 3 (2).
- McLuhan, Marshall (1965), *Understanding Media: The Extensions of Man*. New York: McGraw Hill.
- Marks, Lawrence and Michael Kamins (1988), "The Use of Product Sampling and Advertising: Effects of Sequence of Exposure," *Journal of Marketing Research*, 25, 266-82.

- Nelson, Philip J. (1981), "Consumer Information and Advertising," in *Economics of Information*, eds. Malcom Galatin and Robert D. Leiter, Boston: M. Nijhoff Publishers.
- Payne, John W., James R. Bettman, and Eric J. Johnson (1988), "Adaptive Strategy Selection in Decision Making," *Journal of Experimental Psychology*, 14, 534-52.
- Pham, Michel Tuan, Tom Meyvis; and Rongrong Zhou (2001), "Beyond the Obvious: Chronic Vividness of Imagery and the Use of Information in Decision Making," *Organizational Behavior and Human Decision Processes*; New York; 84(2), 226-253.
- Raden, David (1985), "Strength Related Attitude Dimensions," *Social Psychology Quarterly*, 48 (4), 312-30.
- Reeves, Byron and Clifford Nass (1996), *The Media Equation*. Palo Alto, CA: CSLI Publications.
- _____, Ben Detenber, and Jonathan Steuer (1993), "New Televisions: The Effects of Big Pictures and Big Sound on Viewer Responses the Screen," Paper presented at the annual meeting of the International Communication Association, May
- Schloerb, David W. (1995), "A Quantitative Measure of Telepresence," *Presence*, 4 (1), 64-80.
- Sheridan (1996), "Further Musings on the Psychophysics of Presence," *Presence*, 5 (2), 241-46.
- _____. (1992), "Musings on Telepresence and Virtual Presence," *Presence*, 1 (1), 120-26.
- Smith, Robert E. and William R. Swinyard (1988), "Cognitive Response to Advertising and Trial: Belief Strength, Belief Confidence and Product Curiosity," *Journal of Advertising*, 17 (3), 3-14.
- _____. (1983), "Attitude-Behavior Consistency: The Impact of Product Trial Versus Advertising," *Journal of Marketing Research*, 20, 257-67.
- _____. (1982), "Information Response Models: An Integrated Approach," *Journal of Marketing*, 46, 81-93.
- Solomon, Gregg Eric Arn (1996), "Psychology of Novice and Expert Wine Talk," *American Journal of Psychology*, 103 (4), 495-517.
- Stern, Barbara (1994), "A Revised Communication Model for Advertising: Multiple Dimensions of the Source, the Message, and the Recipient," *Journal of Advertising*, 23 (2), 5-14.
- Steuer, Jonathan (1995), "Vividness and Source of Evaluation as Determinants of Social Responses toward Mediated Representations of Agency," Unpublished Doctoral Dissertation, Stanford University.
- _____. (1992), "Defining Virtual Reality: Dimensions of Determining Telepresence," *Journal of Communication*, 42 (4), 73-93.
- Stewart, David W. and Scott Ward (1994), "Media Effects on Advertising," in *Media Effects: Advances in Theory and Research*, J. Bryant and D.Zillman, Eds. Hillsdale, NJ: Erlbaum.
- Wright, Alice A. and John Lynch (1995), "Communication Effects of Advertising versus Direct Experience When Both Search and Experience Attributes are Present," *Journal of Consumer Research*, 21, 708-18.

Wright, Peter.L. (1974), "The Harassed Decision Maker: Time Pressures, Distractions, and the Use of Evidence," *Journal of Applied Psychology*, 59, 555-61.

Wu, Chenghuan and David Shaffer (1987), "Susceptibility to Persuasive Appeals as a Function of Source Credibility and Prior Experience with the Attitude Object," *Journal of Personality and Social Psychology*, 52 (4), 677-88.

Figure 1 Conceptual Model

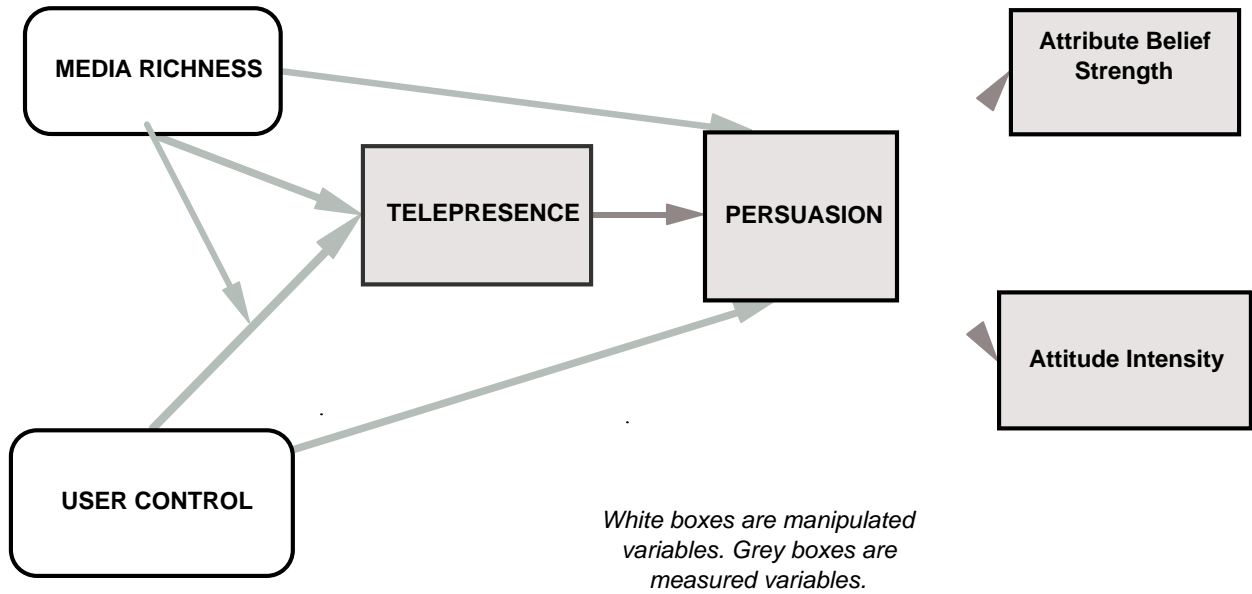


Table 1 Review of Studies on Advertising and Experience: Main Effects and Interactions

Factors Studied	Distinguishing Factors of Advertising versus Direct Product Experience	Source
Claim and Source Credibility	Lower than for DPE	Ford, Smith and Swasy (1990) Hoch and Deighton (1989) Smith and Swinyard (1983, 1988)
Belief Confidence	Lower than for DPE	Smith & Swinyard (1988) Marks and Kamins (1988)
Attitude accessibility	Non-linear effect. Higher than for DPE with one and two exposures	Berger and Mitchell (1989)
Attitude Confidence	Always lower than for DPE but increases with number of repetitions	Berger and Mitchell (1989)
Attitude-Behavior Consistency	Lower than for DPE Increases with number of repetitions	Smith and Swinyard (1983) Berger and Mitchell (1989)
Interaction Effects/Order of Exposure	Influences experience when encountered first Can lessen effects of negative trial Influences experience when experience is ambiguous	Deighton (1984) Marks and Kamins (1988) Smith & Swinyard (1993) Hoch and Ha (1989) Smith & Swinyard (1993)
Resistant to Change	Less resistant to counterattack than DPE More influenced by source credibility than DPE	Wu and Shaffer (1987)

Table 2 List of Selected Wine Attributes for Study 1

1. Strong Winery Heritage
2. Cabernet Sauvignon Grape
3. Impressive Expert Ratings
4. Informative Label
5. Meaningful Name (Caliterra)
6. Chilean Wine Making Abilities
7. Fruity Aroma
8. Woody Aroma
9. Fruity Flavor
10. Well-balanced
11. High in Tannin
12. Fit with Latin American Food

Figure 2

Main Screen of Stimuli: Study 1

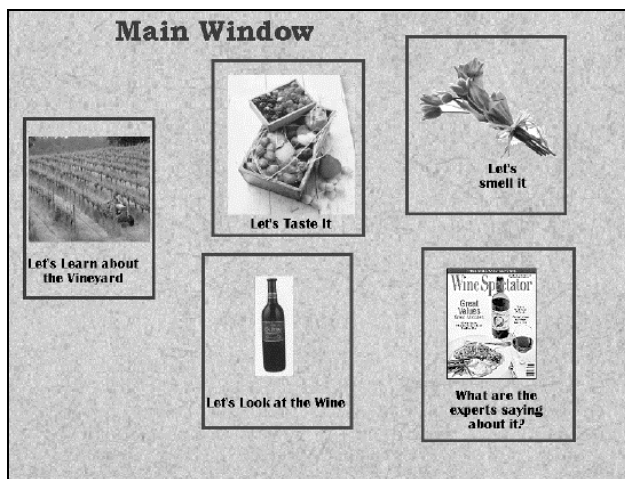


Table 3

Telepresence Scale for Study 1

1. During the exercise, I felt I was in the world the computer created.

Strongly Disagree
1.....2.....3.....4.....5.....6.....7
Strongly agree

2. During the exercise, I forgot that I was in the middle of an experiment.

Strongly Disagree
1.....2.....3.....4.....5.....6.....7
Strongly agree *

3. During the exercise, my body was in the room, but my mind was inside the world created by the computer.

Strongly Disagree
1.....2.....3.....4.....5.....6.....7
Strongly agree

4. The computer-generated world seemed to me "somewhere I visited" rather than "something I saw."

Strongly Disagree
1.....2.....3.....4.....5.....6.....7
Strongly Agree

5. I felt I was more in the "computer world" than the "real world" around me when was going through the exercise.

Strongly Disagree
1.....2.....3.....4.....5.....6.....7
Strongly Agree

6. I forgot about my immediate surroundings when I was navigating through the exercise.*

Strongly Disagree
1.....2.....3.....4.....5.....6.....7
Strongly Agree

7. When the computer exercise ended, I felt like I came back to the "real world" after a journey.

Strongly Disagree
1.....2.....3.....4.....5.....6.....7
Strongly Agree

*The items were modified in Study 2 by negatively wording them, as follows:

2. During the exercise, I DID NOT forgot that I was in the middle of an experiment.

6. I DID NOT forgot about my immediate surroundings when I was navigating through the exercise

Table 4 Mediation Results for Wine

Dependent Variables	Independent Variables	
	Telepresence	Realism
Telepresence		.55 (.13)***
Belief Strength	.28 (.06)***	.19 (.09)**
	.27 (.06)***	.04 (.09)
Attitude Strength	.29 (.07)***	.17 (.11)*
	.28 (.07)***	.02 (.11)

*p<.10

**p<.05

***p<.01

See Baron and Kenny (1986, p.1177) for the description of the mediation tests.

Table 5 List of Selected Face Cream Attributes for Study 2

1. Benefits of Lavender
2. Benefits of Aromatherapy
3. Chamomile Aroma
4. Rosemary Aroma
5. Hydrating
6. Leave face feeling smooth
7. Importance of SPF with AHA's
8. Contains powerful antioxidants
9. Unique formula
10. Prestigious Manufacturer
11. Reputable Brand Name
12. Suitability for All Skin Types

Figure 3

Main Screen for Study 2

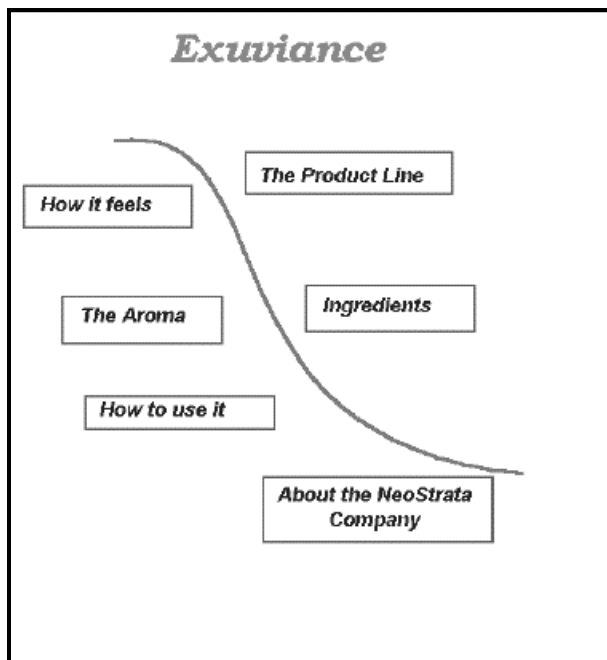


Table 6

Mediation Results for Face Cream

Dependent Variables	Independent Variables	
	Telepresence	Realism
Telepresence		.32 (.13)**
Belief Strength	.36 (.09)***	
		.32 (.13)**
	.32 (.09)***	.22 (.13)**
Attitude Strength	.43 (.12)***	
		.28 (.17)**
	.41 (.12)***	.15 (.17)

*p<.10

**p<.05

***p<.01