EMBODIED CONSUMPTION: UNDERSTANDING AVATARED CONSUMERS

Session Chairs: Haiyang Yáng (INSEAD) and Amitava Chattopadhyay (INSEAD)

Presentation Titles and Authors:
"Marketing to Avatars: The Impact of Virtual Embodiment on Self-Concept and Behavior" Haiyang Yáng* (INSEAD) and Amitava Chattopadhyay (INSEAD)

"Virtual Self-Endorsing: How Digital Self-Representations Influence Brand Preference" Sun Joo Ahn* (Stanford University) and Jeremy Bailenson (Stanford University)

"The Role of Context and Content on Recognition Accuracy in Virtual Worlds" Francesco Massara* (IULM University) and Thomas P. Novak (University of California)

"Trust among the Avatars: Playing Trust Games in a Virtual World, with and without Textual and Visual Cues" Stephen Atlas* (Columbia University) and Louis Putterman (Brown University)

* All speakers have agreed to serve if the special session proposal is accepted

Session Overview: Three dimensional virtual worlds, or metaverses, are emerging as an important medium, and are predicted to be the dominant Internet interface of the future (Sarvary 2008). Indeed, hundreds of millions of people have entered these virtual worlds, interacting with each other, spending billions of real-world dollars, and living out their digital, second lives. An increasing number of corporations such as Adidas, Diesel, L'Oréal, Redbull, and Sony have rushed into metaverses, courting their "avatared" consumers. Yet, research on avatars and three-dimensional virtual worlds has been limited, although consumer behavior in this domain poses interesting questions for both theory and practice. The purpose of this proposed special session is to draw the attention of consumer researchers to the emerging frontier of embodied consumption, to present current research, and to foster a discussion of potentially interesting questions on consumption behavior in this new context and spark interest and future research on the topic. In the first of four research presentations, Yáng and Chattopadhyay provide an introduction to embodied consumption and offer a theoretical framework that outlines the process through which virtual embodiment affects consumer preference and decision making. The second presentation by Ahn and Bailenson explores the impact of virtual self-representation further; they show that self-endorsing (i.e., digitized selves as endorsers) can significantly influence consumers' brand attitude and that involvement and self-referencing are two important mediators of the effect. The third presentation by Massara and Novak reveals the differences between three dimensional virtual worlds and the conventional web, discussing how these differences impact consumer information processing and memory. In the last presentation, Atlas and Putterman, using experimental economics games with stakes comparable to "in-world" wages, investigate whether trust and reciprocity in a virtual world are comparable to those in the real world.

Contributions: This special session contributes to the ACR conference in five ways. First, through four presentations on different aspects of embodied consumption, we introduce an emerging research frontier to consumer researchers. Second, we highlight a number of psychological theories that shed light on the mechanisms through which avatar embodiment influences consumer behavior in the virtual and real worlds. Third, we present a variety of methodological tools and approaches for metaverse-based behavioral research, which are particularly useful to researchers interested in pursuing research on embodied consumption. Forth, we shed light on the differences and similarities between three dimensional virtual worlds, the conventional Web, and the real world.

Finally, we aim to initiate a discussion among consumer researchers on the theoretical development and future research directions in this emerging domain.

Likely Audience: This session would appeal to a wide range of consumer researchers, such as those interested in new media, automaticity, branding, decision making, self-concept, and trust.

"Marketing to Avatars: The Impact of Virtual Embodiment on Consumer Self-Concept and Behavior" (Yáng and Chattopadhyay)

ABSTRACT

In 3D-virtual-world based experiments, we found that participants formed self-conceptions that were consistent with the image their avatars projected, which significantly influenced participants' product evaluations. These effects were moderated by the extent to which participants identified with their avatars, and the embodiment experience influenced behavior through a predominantly unconscious process.

LONG ABSTRACT

Hundreds of millions of people have entered three dimensional virtual worlds, interacting with each other and living out their digital second lives as avatars. Two streams of research shed light on the mechanism through which avatar embodiment may influence consumer self-concept. First, Aaker (1999) showed that self-concept is not a static and stable structure, but a malleable one. The content of the working self-concept depends on what has been invoked by the individual as a result of an experience, event, or situation at the given time (Markus and Kunda 1986). Second, people may make inferences about their own attitudes and values from observing their own behaviors, in a way similar to an outside observer (Bem 1972). These findings suggest that avatar embodiment experience may lead consumers to activate or form a working self-concept that is consistent with their avatar.

Consumer research provides ample evidence of the behavioral implications of the malleable-self. Mick and Buhl (1992) found that individuals under different self-concepts interpret advertisements differently. Aaker (1999) showed that situational cues can activate different personality traits, which, in turn, influence attitudes toward brands with different personality associations. These suggest that, if avatar embodiment results in changes in working self-concept, consumers may exhibit behavior consistent with the shifted working self-concept.

Furthermore, the research on close relationships (Aron et al. 1991) shows that individuals in close relationships tend to have highly overlapping mental representations of one another, and may confuse cognitions about a close other with cognitions about the self. The research on perspective-taking (Galinsky and Moskowitz 2000) demonstrates that perspective-taking may cause subjects to include mental representations of the target or target's group in their evaluations of themselves, leading subjects to evaluate themselves more in line with the perceived attributes of the target or target's group. Given that being embodied in an avatar may establish a close relationship between consumers and the avatar and enable them to take the perspective of the avatar, consumers, to the extent that they relate to the avatar, may view themselves as more in line with the avatar. That is, the shift in self-concept and change in behavior are moderated by the extent to which consumers identify with the avatar.

Finally, prior research has shown that people often are unaware of their mental processes and fail to realize external influences on their behaviors (Bargh 2002). In the context of avatar embodiment, consumers may not be consciously aware that they are identifying themselves with the avatar and incorporating the avatar's attributes into themselves. When, however, their identification with the avatar is made salient, consumers are likely to become aware of the influence of avatar embodiment and correct for it in their decision making.

To test our hypotheses, we developed two avatars that were identical in all aspects except the clothing. The first avatar (hereafter BizPerson) was dressed in business attire, whereas the second (hereafter Surfer) was dressed in surfer style. A pretest established that the avatars were perceived to be equally likable but significantly different on the images they projected.

In Experiment 1, participants were randomly assigned according to a 2 (avatar type: BizPerson vs. Surfer) × 2 (identification level: high vs. low) between-subject factorial design. Those in the high-identification condition (1) customized their avatar using a collection of business (surfer) style clothing items and (2) saw how the avatar looked using virtual mirrors. Through a yoked design, participants in the low-identification condition received avatars customized by those in the high condition. Embodied in their avatar, participants explored a virtual photo gallery, and then reported their self-concept and rated four photographs that were pretested to be congruent with the image of the Surfer. We found that, under the high-identification condition, participants' working self-concept shifted towards the projected image of the avatar they were embodied in; moreover, in comparison with those embodied in the BizPerson avatar, participants using the Surfer gave significantly higher ratings for the target photographs. When identification is low, however, we neither observed any significant differences in self-concept between the two avatar conditions, nor see any significant differences in the ratings of the target photographs.

In Experiment 2, we used a 2 (avatar type: BizPerson vs. Surfer) × 2 (identification awareness: before vs. after completing the dependent measures) between-subject factorial design. Those in the "before" awareness condition answered, prior to the dependent measures, a set of questions regarding the extent to which they identified with the avatar. The opposite was true for those in the "after" condition. The experimental procedure was identical to that of Experiment 1 except that (1) all participants customized their avatar, (2) we unobtrusively recorded participants' behavior in the virtual world and coded the amount of time they spent on the photographs, and (3) participants were also asked to experience a virtual vehicle that was modeled after a stereotypical surfer van. We found that those embodied in the Surfer avatar spent significantly more time looking at the target photos, and, when not made aware of their identification, rated the virtual van and its brand significantly higher.

Overall, the results of our experiments provided support for our hypotheses: when participants identified with their avatar, they formed self-conceptions consistent with the image of their avatar and had higher evaluations of the product congruent with the avatar. Moreover, the embodiment experience influenced behavior through a predominantly unconscious process. We are currently running additional experiments, aiming to show that the effects of avatar embodiment persist across worlds and can impact consumer decision making in the real world.

"Virtual Self-Endorsing: How Digital Self-Representations Influence Brand Preference"

(Ahn and Bailenson)

ABSTRACT

Self-endorsing—using digitized self as the brands' endorser—is a novel branding strategy. Participants wearing a brand of clothing in an immersive virtual environment preferred the brand worn by their virtual self to the brand worn by others. Interactivity is an underlying mechanism of self-endorsing with self-referencing mediating the effect.

LONG ABSTRACT

Virtual platforms enable novel advertising strategies and the use of self-endorsing may increase dramatically. For instance, Yahoo displays image advertisements based on search words. Considering the availability of personal images on the web due to the widespread employment of social networking sites, an advertiser could simply replace the endorser in the image advertisement called by search words with the user to create a self-endorsed advertisement.

Individuals tend to prefer and learn information better when the information involves the self in some way. This is the *self-referencing effect* (Rogers, Kuiper, and Kirker 1977). We argue that the incorporation of the self's virtual representation in an advertisement triggers self-referencing effects by seeing the self use and endorse a brand, and that self-referencing mediates self-endorsing and brand attitude.

Experiment 1 explored whether self-endorsing would create a preference towards an unfamiliar brand compared to other-endorsing (i.e., a typical, but unfamiliar, other person endorser) in a high immersive virtual environment (high IVE). Also, as evidence of self-referencing as a mediator between self-endorsing and brand attitude, we gauged involvement, which is conceptually equivalent to self-referencing (Shavitt and Brock 1984). The main within-subjects variable was the brand used by the self (*self-brand*) versus the brand used by an unfamiliar other (*other-brand*). Participants were placed in a virtual room where they interacted with a computer-operated avatar. Self-endorsing was operationalized by having the participants' avatars wear a shirt with a brand name and the participants seeing another avatar wearing a shirt with a different brand name. Participants saw the world in first person perspective and were able to look down at their shirt with brand logos. Participants were able to move their physical arm and watch their virtual arm move in sync. Results confirmed that self-endorsing positively influenced brand attitude. Users liked brands that were endorsed by the self than by an unfamiliar other. Involvement was shown to be higher for the self-brand compared to the other-brand. Further, the significant difference between brand attitudes for self- and other-brands was completely mediated by involvement. This can be interpreted as evidence for the mediating role of self-referencing because involvement and self-referencing are conceptually equivalent.

Experiment 2 delved further into the process of self-endorsing by separating *identification* (i.e., being assigned a virtual self) from *interactivity* (i.e., linking physical behavior with virtual behavior). Identification with an assigned avatar is an important prerequisite for self-referencing (i.e., self-referencing cannot occur without a 'self'). However, interactivity should be parsed out from identification because it is a novel factor of high IVE which yields a higher sense of involvement compared to traditional media (Edwards and La Ferle 2003). The results of Experiment 1 may be driven by participants identifying with the assigned avatar and referencing the avatar as the self, or alternatively by the participant interactively controlling the avatar, triggering a heightened sense of involvement.

Experiment 2 teased out the effect of interactivity by varying interactivity in three conditions: participants controlling the avatar identified as the self, controlling the avatar identified as the other, or controlling neither. Moreover, an enhanced scale directly measured the degree of self-referencing triggered by self-endorsing. Self-brands were preferred when participants controlled the self avatar, and triggered greater involvement and self-referencing for the self-brand than the other-brand. Controlling the other avatar backfired to yield less support for self-brands than other-brands. This implies that active control of a representation (i.e., interactivity) is more important than simple assignment of one in terms of creating brand preference. Furthermore, the mediation of self-endorsing and brand attitude by involvement and self-referencing was only relevant in the self-interactive condition where interactivity was paired with identification. In the other-interactive condition, interactivity without identification failed to trigger the true process of self-endorsing mediated by involvement and self-referencing, despite higher brand attitude for the other-brand than the self-brand. Thus, results indicate that identification alone via assignment of a self avatar is not sufficient and must be paired with interactivity for effective self-endorsing.

"The Role of Context and Content on Recognition Accuracy in Virtual Worlds"
(Massara and Novak)

ABSTRACT

We investigate differences in recognition accuracy of visual vs. text content presented in two contexts – virtual world (imagery processing) vs. Web browser (discursive processing). In three studies, one completed and two planned, we address the conditions under which a match or mismatch between content and context improves recognition accuracy.

LONG ABSTRACT

Virtual worlds such as Second Life, There.com and Blue Mars are three-dimensional, visually compelling, interactive environments inhabited by avatar representations of real world consumers. Such virtual worlds are beginning to be leveraged as platforms for consumer and marketing research (Novak 2010). An important question is the degree to which behavior occurring within virtual worlds is unique and different from behavior occurring outside the context of virtual worlds. For example, Bell, Castronova and Wagner (2009) have argued that research studies fielded within the context of a virtual world, rather than in an external context such as Web-based survey, prevent a break in immersion that might interfere with accurate recall of the virtual world environment. In general, however, there has been no formal consideration of how context (virtual world vs. Web survey) may interact with the form of information content (visual vs. text), and how the relationship of context and content may vary for different user tasks.

We consider distinctive aspects of virtual worlds for recognition tasks, for visual vs. text stimuli. As highly visual environments, virtual worlds are more likely to induce imagery processing, while Web browsers are more likely to induce discursive processing. When considering target stimuli that are either visual or text-based, this raises the question of whether a match or mismatch of context and content (i.e. assimilation or contrast effects) would be expected in recognition tasks.

We address this question in a series of three studies. Our first study, together with an extensive set of pretests, has been completed and uses a signal detection task (SDT) designed as a low elaboration recognition manipulation involving the shallow encoding of information. Hypotheses for our first study, with brief rationales, are as follows. H1. Recognition accuracy for visual stimuli will be greater than for text stimuli (the often demonstrated "picture superiority effect"). H2. Greater signal strength leads to greater recognition accuracy (at short exposure times there is not sufficient time to encode the information properly). H3. There will be an interaction of content and context. Response accuracy on stimulus recognition is higher for a text (visual) stimulus in a virtual world (web based) environment, and is lower for a text (visual) stimulus in a web based (virtual world) environment. (In virtual worlds the imagery processing system is used to process the context, so the alternative discursive system has greater resources for encoding the stimuli, leading to superior results for text. The reverse is true in Web based environments.) H4a: The interaction of content and context in H3 will be significant at high levels of signal strength (greater time is available for encoding). H4b: The interaction of content and context in H3 will be nonsignificant at low levels of signal strength (insufficient time is available for encoding).

In a 2x2x2 design we 1) administered an SDT either within the context of a virtual world (Second Life) or a Web browser, where we 2) presented a slideshow of either 40 visual or 40 text-based stimuli, where 3) signal strength was manipulated by presenting stimuli at relatively short (500ms, the shortest presentation time feasible in Second Life) or long (1500ms) exposure durations. After the slideshow, a second series of 40 stimuli was shown (20 that were presented before and 20 new) and respondents were asked to indicate if they recognized the stimuli from the first slideshow. Our primary dependent measure from this SDT was β, decisional criterion or bias, which is sensitive to content/context manipulations and which can be interpreted as the likelihood of good memories with respect to false memories. An additional dependent measure was d', which indicates the sensitivity of the respondent in recognizing previous information.

A total of 256 respondents completed Study 1. H1 was supported for sensitivity d' ($p<.001$) but not bias β, so that subjects were more sensitive towards pictures but not more accurate in recognizing them. H2 was supported for both sensitivity d' ($p<.01$) and bias β ($p<.01$) so that higher signal strength lead to greater recognition accuracy. For H3 we found supporting significant two-way interactions between context and content on both sensitivity d' ($p<.01$) and bias β ($p<.05$). As predicted, means for β were higher in the virtual world context for text (M=1.75) than for pictures (M=1.45), while means were higher in the Web condition for pictures (M=1.61) than for text (M=1.20). H4a and H4b are supported in that the three way interaction was significant for bias β ($p<.05$). Further, at high (low) levels of signal strength the simple interaction effect of context and content was significant (not significant).

Thus, Study 1 demonstrates a contrast effect whereby text stimuli are recognized more accurately in virtual worlds, but visual stimuli are recognized more accurately in Web browsers. Mismatch between context and content improves recognition accuracy. Our second study will employ a manipulation requiring a deeper encoding of the stimuli, and hypothesizes an opposite interaction whereby an assimilation effect (i.e. match) improves recognition accuracy. Our third study will show pairs of matched pictures and text (semantic coherence) or mismatched pictures and text (semantic incoherence) to test the hypothesis that a contrast effect will be observed in the mismatched condition, but not in the matched condition. Together, this set of studies has important implications for response accuracy in contexts that vary in imagery vs. discursive processing, as well as the recall of marketing communications in virtual world vs. Web contexts.

"Trust Among the Avatars: Textual and Visual Cues in a Virtual World" (Stephen and Putterman)

ABSTRACT

Residents of the virtual world, Second Life, played a trust game for stakes comparable to "in-world" wages. We find high levels of trust and reciprocity despite high anonymity, suggesting that subjects infuse their avatars with real-world sociality. Pro-social payments in the virtual world were influenced by verbal and visual stimuli, reinforcing that environmental stimuli influence social norms during virtual embodiment.

LONG ABSTRACT

As experimentalists explore the potential of virtual worlds to provide a low-cost medium to study a diverse pool of subjects, exploration of established behavioral phenomena "in-world" provides value by both validating theory and establishing consistency of social norms across platforms. This investigation replicated the original Trust Game (Berg, Dickhaut and McCabe, 1995) paradigm (hereinafter BDM) in the virtual world, Second Life, with compensation comparable to "in-world" wages that are far below those of physical labs. The results reveal that baseline trust and reciprocity in the virtual lab is comparable to that of physical labs, suggesting that pro-social motivations extend to anonymous interactions while embodied in an avatar. We further found that pro-social behaviors in virtual worlds are heavily influenced but not eliminated by verbal and visual contextual cues and, in apparent contradiction with economists' expectations trust increases with age, employment and income among avatars.

Data was collected from 300 subjects from 39 countries. Among the first wave of in-world trust games, our lab is (to our knowledge) the first instance of a persistent economic experiment in a virtual world that eliminates interaction with the experimenter by automating recruitment, instruction, measurement and compensation. Further, this experiment appears to be unique in using payoffs commensurate with earnings from in-world jobs. As in-world wages are approximately one twentieth of the self-reported wage from real-world employment (55% of our subjects report holding a job in Second Life with hourly wages averaging L$170 per hour, corresponding with USD$0.65 per hour), we paid subjects a tenth of the amount paid by Fiedler et al. (in press) and by

Chesney et al. (2009) without threatening incentive compatibility. Though subjects earned an average of L$177 (66 cents) for twenty minutes of involvement, 88% of respondents stated that the prospect of earning Lindens was "very important" or "moderately important" for their participation in the study.

The baseline treatment replicated the BDM trust game design. Subjects were endowed with L$100 (38 cents) and randomly assigned to be a first-mover or second-mover. The first decision maker chose to send an amount from their endowment; that amount was tripled and given to the second mover. This amount was in addition to their initial endowment, which is anonymously given to rule out a first-mover fairness motivation; (see Cox, 2004, for a review of this confound). The second mover could then anonymously send an amount to the first mover up to the tripled amount received. Equilibrium play assuming common knowledge of rationality and self-interested preferences is for the second mover to send nothing and, expecting this, the first mover sends nothing. In contrast, BDM and many replications reveal that a majority of first-movers and second-movers receiving money send positive amounts, a result widely interpreted as evidence of efficiency-enhancing social preferences wherein the first-movers trust and the second-movers exhibit reciprocity.

Evolutionary psychologists hold that social preferences are determined by innate predispositions that respond to environmental triggers (see Buss, 2008, for a review). One example is provided by Bateson, Nettle and Roberts (2006), who found that honor system payments were three times higher when the price list contained an image of human eyes than when it contained flowers. In this vein, we explored how virtual environmental stimuli influence trust and reciprocity through the inclusion of visual and verbal treatments. The visual treatments added optimistic and cautionary images to the baseline lab environment, while the textual treatments respectively added a cooperative and a competitive line to the instructions. To explore whether the visual and textual cues were mutually reinforcing, we also included treatments including the optimistic with cooperative cues and cautionary with competitive cues.

The baseline results reveal that first-movers sent on average 51.8% of their endowment, a finding remarkably similar to BDM (51.6%) and other replications in virtual and real labs. The smaller stakes, a more diverse subject pool and virtual environment in this case did not appear to impact average first-mover sending behavior. Mann-Whitney tests reveal that the differences within verbal treatments and visual treatments are each economically meaningful (close to a quarter of the total endowment size) and statistically significant ($p<0.05$). The combined treatments were not significantly different from the separated treatment effects. The second movers in the baseline treatment returned roughly half (50.7%) of the tripled amount received. This is considerably higher than the 33.3% necessary to make first-movers break even, higher than the 29.8% in BDM. Raw second-mover sending was predicted by treatment, but these effects disappeared after controlling for first-mover sending, indicating that the treatments did not influence reciprocity beyond its influence on trust.

The social preferences revealed by second-mover decisions resulted in a 42% return on trusting for the first-movers and in our virtual lab, trust facilitated a Pareto-superior allocation to the endowment. Our results highlight the potential advantages of experimentation in virtual worlds, including the potential to motivate subjects with lower incentives and to test the robustness of theories in an unconventional domain. Our experiment affirmed results from a brick-and-mortar laboratory setting and strongly support the notion that, social behaviors in virtual worlds, like the real world, are responsive to environmental cues.

REFERENCES

Aaker, Jennifer L. (1999), "The Malleable Self: The Role of Self- Expression in Persuasion," *Journal of Marketing Research*, 36 (February), 45–47.

Aron, Arthur, Elaine N. Aron, Michael Tudor, and Greg Nelson (1991), "Close relationships as including other in the self", *Journal of Personality and Social Psychology*, 60, 241–253.

Bargh, John A. (2002), "Losing Consciousness: Automatic Influences on Consumer Judgment, Behavior, and Motivation," *Journal of Consumer Research*, 29 (September), 280–85.

Bateson, Melissa, Daniel Nettle and Gilbert Roberts (2006), "Cues of Being Watched Enhance Cooperation in a Real-World Setting," *Biological Letters* 2: 412-414.

Bell, M. W., Castronova, E., & Wagner, G. G. (2009), *Surveying the Virtual World: A Large Scale Survey in Second Life Using the Virtual Data Collection Interface (VCDI)*. June 12.

Bem, Daryl J. (1972), "Self-perception theory," in *Advances in Experimental Social Psychology*, L. Berkowitz, ed., New York: Academic Press.

Berg, Joyce, John Dickhaut, and Kevin McCabe (1995), "Trust, Reciprocity and Social History," *Games and Economic Behavior* 10: 122-42.

Buss, David (2008), *Evolutionary Psychology. The New Science of the Mind, 3rd Edition*. Boston: Allyn and Bacon.

Chesney, Thomas, Swee-Hoon Chuah and Robert Hoffmann (2009), "Trust in VCommerce: An Experimental Approach," mimeo, International Center for Behavioral Business Research, Nottingham University Business School.

Clifford, Stephanie (2009), "Yahoo Shows Search Ads with Images and Video," *The New York Times.*

Cox, James, (2004), "How to identify trust and reciprocity," *Games and Economic Behavior* 46: 260-81.

Debevec, Kathleen (1995), "Self-Referencing Measurement in Persuasive Communications," *Psychological Reports*, 77 (3, Pt 2), 1097-1098.

Edwards, Steven M., and Carrie La Ferle (2003), "Consumer Role-Taking: Enhancing the Online Experience," *Journal of Current Issues and Research in Advertising,* 25 (2), 45-56.

Fiedler, Marina and Ernan Haruvy, forthcoming, "The Lab versus the Virtual Lab and Virtual Field—An Experimental Investigation of Trust Games with Communication," *Journal of Economic Behavior and Organization* (in press).

Galinsky, Adam D. and Gordon B. Moskowitz (2000), "Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism," *Journal of Personality and Social Psychology*, 78, 708–724.

Markus, Hazel and Ziva Kunda (1986), "Stability and Malleability of the Self-Concept," *Journal of Personality and Social Psychology*, 51 (October), 858–866.

Mick, David Glen and Claus Buhl (1992), "A Meaning-Based Model of Advertising Experiences," *Journal of Consumer Research*, 19 (December), 317–338.

Novak, Thomas P. (2010), "eLab City: A Platform for Academic Research on Virtual Worlds," *Journal of Virtual Worlds Research*, April/May.

Perkins, Andrew, Mark R. Forehand, and Anthony Greenwald (2005), "Implicit Self-Referencing: The Self-Concept as a Source of Implicit Attitude Formation," Unpublished manuscript, Rice University, Houston, TX 77005.

Rogers, Timothy B., Nicholas A. Kuiper, and William S. Kirker (1977), "Self-reference and the Encoding of Personal Information," *Journal of Personality and Social Psychology,* 35*,* 677-88.

Sarvary, Miklos (2008), "The Metaverse: TV of the Future?" *Harvard Business Review*, 86(2). 30.

Shavitt, Sharon, and Timothy C. Brock (1984), "Self-Relevant Responses in Commercial Persuasion," In K. Sentis & J. Olson (eds.), *Advertising and Consumer Psychology.* New York: Praeger.

Zaichkowsky, Judith L. (1994), "The Personal Involvement Inventory: Reduction, Revision, and Application to Advertising," *Journal of Advertising,* 23 (4), 59-70.