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An Exploratory Study of Shopper Perception and Shopping Duration in a Virtual Reality Store

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Keywords: Mystery, virtual reality, exploratory behavior

Introduction Virtual reality (VR) technology provides an excellent opportunity for retailers. First, as an easy testing of different versions of physical store layouts and designs, it is extremely cost-effective and attractive. Second, VR provides a way to test effects of specific store design factors in an environment that closely resembles real-life. Lastly, recent applications of VR in diverse areas such as theme park and gaming, and availability of VR headsets in the market suggest potential use of VR in retail. Thus, it is timely to investigate how consumers respond to VR stores. We investigated how consumers respond to VR storefronts by examining their affective and cognitive responses, and actual behavior.

Literature Review and Hypotheses Development The way space is constructed influences people's understanding and exploration of the environment. According to Kaplan and Kaplan (1982), two factors - complexity and mystery - are related to a person's exploration of space. Mystery, the promise of new but related information if one moves further into the scene (Kaplan, Kaplan, & Brown, 1989), predicts people's preference and intention to explore of the environment. This environmental mystery can be created by restricting the shoppers' field of vision in retail environment (Titus & Everett, 1995). People are motivated to explore the environment because part of it is hidden from their current visual perspective. Theoretically, mystery is likely to be connected to curiosity because both mystery and curiosity are created by information gap (Litman, 2005). Logically, environmental mystery can be created by stimulus factors (visual occlusion), and this environmental design can evoke feeling of curiosity due to the information gap. Anticipation of finding new information is likely to increase curiosity of a person. People will also feel aroused when they feel the gap between known and unknown information in the state of curiosity, and once they close the gap by exploring the space, they will feel pleasure. Therefore, it is hypothesized that mystery would predict curiosity (H1) and that curiosity would increase arousal (H2a) and pleasure (H2b). Retail atmospherics literature (Turley & Milliman, 2000) provides evidence that arousal and pleasure enhance shoppers' attitude (H3a), purchase intention (H3b) and time in store (H3c).

Methods Four virtual apparel store models were developed using Sketchup. The VR storefronts were designed to evoke mystery by creating visual occlusion (e.g., enclosed display). All stores contained the same products. Thirty-nine participants were randomly assigned to one of four models. Participants wore a VR headset which displayed inside a virtual shopping mall

and were directed to approach the store from a path. Once they approached the storefront, a researcher verbally asked questions regarding their impression of the storefront while the participants observe the storefront via the headset and they verbally answered. This verbal questionnaire included items for mystery perception, curiosity, and store characteristics. Once they finished evaluating the storefront, the participants were told to freely explore the inside of the store as much as they want to. The participants raised their hands when they finished exploring the store. The time the participants spent in the store was measured. After the store exploration, the participants completed a paper-and-pencil survey to indicate their attitude toward the store, current emotional state (arousal, pleasure), purchase intention, and felt sickness.

Results and Discussion Data was analyzed using SPSS 21 with PROCESS macro for mediation analyses (Preacher & Hayes, 2008). The results generally supported the hypotheses. As hypothesized, mystery showed direct effects on attitude ($\beta=474$, $p<.01$) and purchase intention ($\beta=.370$, $p<.05$). The direct effect of mystery on exploration time approached significance level ($\beta=.309$, $p=.07$). Participants who perceived a higher level of mystery tended to spend a longer time in the store. Mediation analyses revealed that curiosity fully mediates the relationship between mystery and attitude, and that curiosity predicted pleasure through arousal. Mystery also affected purchase intention through pleasure. However, effect of mystery on exploration time was not mediated by any proposed variables.

Implications and Limitations This study provides important implications for apparel retailers and store designers. Mystery feelings evoked by store design should be an important consideration as it not only increases consumers' pleasure, it also impacts purchase intention. Particularly, this study demonstrates that a sense of mystery can be achieved by the partial concealment of store fronts which restricts the shoppers' field of vision. Due to the nature of VR experiment, only a small number of participants were recruited. Further studies are required to confirm the results and generalize the findings.

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