# Busy Minds: The Effect of Busyness and Virtual Product Presentation Format on Online Shopping Behavior

Seeun Kim, Auburn University
Tae Hyun Baek, University of Kentucky
Sukki Yoon, Bryant University

Keywords: virtual product presentation format, busyness, online shopping behavior

## Purpose/Rationale

The technological advancement of virtual product presentation has enabled marketers to shift their focus from static images to 360-degree spin rotation in e-commerce advertising. Despite growing interest in comparing the effectiveness of three-dimensional (3D) and two-dimensional (2D) displays, less is known about contextual factors that might strengthen or eliminate the effect of virtual product presentation format on online shopping behavior. In this study, we focused on the perception of self as having a busy mindset, a characteristic known as "busyness" (Kim, Wadhwa, & Chattopadhyay, 2019). Today, consumers are likely to engage in multitasking that keeps them busy. Consumers often browse different online shopping sites while watching TV or chatting with friends, activities that shift their attention and consume cognitive resources, while others might focus on shopping with no distractions. To explore this phenomenon further, we examined whether a busy mindset might influence consumer responses to virtual product presentation format while shopping online.

## Conceptual Framework/Hypothesis Development

3D product presentation enables consumers to experience the spatial depth of objects (Yim et al., 2019). Previous findings have demonstrated that 3D product presentation enhances brand attitude, consumer satisfaction, and purchase intention because 3D viewing is more enjoyable and helps consumers evaluate product functionality (Algharabat, Alalwan, Rana, & Dwivedi, 2017; Jiang & Benhasat, 2007). Given that 3D product presentation allows consumers to pay attention to and/or imagine rich sensory detail (i.e., sight, touch, sound, smell, and *taste;* Choi & Taylor, 2014; Schlosser, 2003), we *predicted that 3D product presentation would enhance purchase intention more than traditional 2D product presentation in the context of online shopping. Scholars have further suggested that the superior effects of virtual product presentation over static images are not prominent when a product evaluation task is highly complex (Jiang & Benbasat, 2007).* According to cognitive load theory (Sweller, 1994), human cognitive capacity is limited, and high information load affects information processing. That is, when people must exert excessive cognitive effort due to high information load, they are likely to simplify their task execution strategies (Jiang & Benbasat, 2017). Li et al. (2016) suggested that a high level of busyness impeded product attribute information processing and resulted in poor decision making. Based on previous findings, we expected that consumers would simplify their shopping task in the busy condition, thereby attenuating the superior effects of 3D product

presentation on purchase intention. Meanwhile, when busyness is low, people might have more information processing capability and fully immerse themselves in the viewing experience. As a result, the rich sensory modality of 3D product presentation should elicit purchase intention more than 2D product presentation. Thus, we proposed the following hypotheses:

*H1: When busyness is not salient, 3D product presentation will elicit greater purchase intention than 2D product presentation.*
*H2: When busyness is salient, the superior effect of 3D product presentation on purchase intention will decrease.*

Research Design/Procedure

In Study 1, we used a 2 (mindset: busy vs. control) × 2 (product presentation format: 3D vs. 2D) between-subjects design. In exchange for course credit, 191 undergraduate students (47.3% male, $M_{age}$ = 19.3) from a northeastern U.S. university participated in a controlled lab experiment. Following Kim, Wadhwa, and Chattopadhyay (2019), we used an essay-writing priming task to manipulate busy mindset. In the busy condition, participants thought about and wrote down three tasks/activities that kept them busy. In the control condition, they thought about and wrote down three tasks/activities they did on a typical day on campus. Next, they viewed and evaluated two virtual product presentation formats, 3D (i.e., 360-degree spin rotation) or 2D (i.e., static images), for a fashion product (i.e., pair of sunglasses) in a simulated online shopping environment. Finally, participants responded to purchase intention measures, manipulation check items, and demographic questions. In study 2, we replicated Study 1 with two exceptions. First, to increase generalizability, we used a different product category: indulgent food choice (i.e., chocolate cookies). Second, we manipulated busyness by asking participants to memorize an eight-digit number in the busy condition and to recall it as accurately as possible at the end of the experimental session (Yoon, Choi, & Song, 2011). The sample for Study 2 included 232 undergraduate students (49.5% male, $M_{age}$ = 19.4).

Findings

In Study 1, participants reported greater purchase intention when they explored the product using 3D presentation than 2D presentation ($M_{3D}$ = 3.90, $M_{2D}$ = 2.84, $t$ = -3.47, $p < .001$). Importantly, the interaction effect between product presentation format and busyness on purchase intention was statistically significant ($F$ (1, 185) = 5.467, $p < .05$). Planned contrasts showed that in the control condition, participants had greater purchase intention when exposed to 3D (vs. 2D) product presentation ($M_{3D}$ = 5.65, $M_{2D}$ = 4.79, $F$ (185) = 4.072, $p < .05$). However, in the busy condition, no significant difference between 3D and 2D product presentation emerged ($M_{3D}$ = 5.27, $M_{2D}$ = 5.38, $F$ (185) = 1.671, $p$ = .198). Findings from Study 2 ($n$ = 232) further supported our hypotheses. A significant interaction effect between product presentation format and busyness emerged for purchase intention ($F$ (1, 227) = 9.038, $p < .01$). Planned contrasts revealed that in the control condition, participants had greater purchase intention when exposed to 3D (vs. 2D) product presentation ($M_{3D}$ = 5.04, $M_{2D}$ = 4.39, $F$ (227) = 6.171, $p < .05$).

However, in the busy condition, no significant difference between 3D and 2D product presentation emerged ($M_{3D}$ = 4.39, $M_{2D}$ = 4.85, $F$ (227) = 3.110, $p$ = .08).

Discussion

The results of our study confirm previous findings that 3D product presentation is more effective than 2D product presentation (e.g., Algharabat et al., 2017; Choi & Taylor, 2014; Schlosser, 2003). Importantly, we identified a boundary condition by showing that busyness moderated the effect of virtual product presentation format on purchase intention. Our findings provide, for the first time, evidence that the superior effect of 3D product presentation on online shopping behavior might be attenuated by busyness. Our findings also have several managerial implications for retailers and e-commerce marketers who want to enhance consumers' virtual shopping experiences. Marketing practitioners should try to avoid multitasking environments that might induce busy mindsets, thereby enhancing the positive impact of 3D product presentation on purchase intention.

References

Atalay, A. S., Bodur, H. O., & Bressoud, E. Choi, Y. K., & Charles, R. Y. (2014). How do 3 dimensional images products on the Internet? *Journal of Business Research, 67,* 2164 -2170.

Craik, I. M. Fergus, & Lockhart, S. Robert. (1972). Level of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior, 11*, 671-684.

Jiang, Z., & Benbasat, I. (2007). The effects of presentation formats and task complexity on online consumers' product understanding. (2007). *MIS Quarterly, 31*(3), 475-500.

Kim, J. C., Wadhwa, M., & Chattopadhyay, A. (2018). When busy is less indulging: Impact of busy mindset on self-control behaviors. *Journal of Consumer Research*, *45*(5), 933-952.

Li, H., Daugherty, T., & Biocca, F. (2001). Characteristics of virtual experience in electronic commerce: A protocol analysis. *Journal of Interactive Marketing, 15*(3), 13–30.

Li, M., Wei, K-K., Tayi, G. K., & Tan, C-H. (2016). The moderating role of information load on online product presentation. *Information & Management, 53*, 467-480.

Norman, D. A., & Bobrow, D. G. (1975). On data-limited and resource-limited processes. *Cognitive Psychology, 7*(1), 44-64.

Schlosser, A. E. (2003). Experiencing products in the virtual world: The role of goal and imagery in influencing attitudes versus purchase intentions. *Journal of Consumer Research, 30*(2), 184–198.

Yim, M. Y. C., Abdourazakou, Y., Sauer, P. L., & Park, S. Y. (2018). Modelling the dimensionality effects on brand placement effectiveness in stereoscopic 3D versus 2D sports games. *International Journal of Advertising*, *37*(6), 958-983.

Yoon, S., Choi, Y.K., & Song, S. (2011). When intrusive can be likable. Product placement effects on multitasking consumers. *Journal of Advertising, 40*(2), 63-76