

## Untangling the Way Perceived Control Influences Attitude toward the Website (Aws): The Mediating Roles of Emotion and Perceived Diagnosticity\*

Ki-Young Lee<sup>1)†</sup>      Doohwang Lee<sup>2)</sup>      Jin Kyun Lee<sup>1)</sup>      Sunhee Joo<sup>3)</sup>

<sup>1)</sup>School of Advertising & PR at Hongik University

<sup>2)</sup>Department of Journalism and Communication at Kyung Hee University

<sup>3)</sup>Broadcasting and Media Research Department at KISDI

This study investigates whether and how perceptions of control in an online shopping environment affect consumer responses to a product website. Specifically, the perception of control elicited by an interactive 3D product interface is predicted to foster a positive consumer attitude toward the website (Aws) both directly and indirectly through user emotional responses (i.e., pleasure and arousal) and the perceived diagnosticity of the website as a product evaluation tool. Structural equation modeling with latent composites indicates that perceived control was positively associated with Aws and notably, the influence of perceived control on Aws was completely mediated via pleasure and perceived diagnosticity. The mediating role of arousal, however, was not supported. Findings suggest that online marketers should put more effort into increasing perceptions of customer control since these perceptions are strongly related to outcomes that have critical importance for marketers.

*Key words* : perceived control, attitude toward the website (Aws), emotional responses, perceived diagnosticity

---

\* This work was supported by 2015 Hongik University Research Fund.

† Corresponding author : Ki-Young Lee, Associate Professor, School of Advertising & PR at Hongik University, spartan@hongik.ac.kr

Doohwang Lee, Associate Professor, Department of Journalism and Communication at Kyung Hee University, doolee@khu.ac.kr

Jin Kyun Lee, Assistant Professor, School of Advertising & PR at Hongik University, feature94@hongik.ac.kr

Sunhee Joo, Associate Fellow, Broadcasting and Media Research Department at KISDI, sjoo@kisdi.re.kr

## Introduction

Perceived control, or the feeling of being in control, is a powerful concept for understanding attitude and behavior (Godek & Yates, 2005). People generally prefer situations where they can exert control and try to avoid situations where other forces dominate (Klimmt, Hartmann, & Frey, 2007). The notion of perceived control is particularly relevant to an online shopping environment. Although online shoppers are increasingly demanding more control over their online shopping experience, the Internet itself is fraught with uncertainties that often create a sense of personal lack of control (Bilgihan, Kandampully, & Zhang 2016; Dabholkar & Sheng, 2009). In the interactive marketing literature, perceived control has been conceptualized as one of the three dimensions of perceived interactivity, while the other two dimensions are two-way communication and speed (i.e., immediacy of response) (McMillan & Hwang, 2002; Song & Zinkhan, 2008). Despite the multidimensional nature of perceived interactivity, prior studies in this research stream have typically examined the net effect of the construct on outcome variables, rather than investigating the effects of its individual dimensions separately (e.g., Jee & Lee, 2002; Wu, 2005). Being dominant, however, this approach tends to blur any precise relationship between a particular dimension of perceived interactivity and its outcome variable (Liu &

Shrum, 2002). Thus, a need arises to isolate and examine the effects of individual dimensions of perceived interactivity. In addition, there has been limited research seeking to explain the psychological processes that underlie the effects of perceived control in the context of online shopping.

Against this backdrop, this study investigates whether perceptions of control in the context of e-commerce are positively related to consumer responses to a website and explore the underlying mechanisms for consumer responses to the website. In terms of the latter focus, emotional responses and perceived diagnosticity are proposed and tested as mediators of the effects of perceived control. In this study, consumer responses to websites are encapsulated in terms of attitude toward the website (hereafter, *Aws*), as it is a key measure of the effectiveness of a website as a successful marketing tool (Chen & Wells, 1999; Pavlou & Stewart, 2000; Rodgers & Thorson, 2000).

## Theoretical Background and Hypotheses

### Impact of Perceived Control on *Aws*

In the context of e-commerce, perceived control refers to the degree to which consumers feel that they are able to influence the process and outcome of their online experience (Kamis, Stern, & Ladik, 2010). Consumers perceived as

having a high degree of control are more likely to bring interest, optimism, and sustained attention to the task in question; the opposite happens when consumers experience a lack of control (Kamis et al., 2010). In practice, control perceptions are usually imbued by enabling users to manipulate the length of time, the content, and the sequence of information presented online so as to determine the results of their browsing experiences (Ariely, 2000; Hoffman, Novak, & Schlosser, 2003).

In the interactive marketing literature, perceived control is typically conceptualized as one of the three dimensions of perceived interactivity (McMillan & Hwang, 2002; Song & Zinkhan, 2008). Studies in this research stream have consistently shown that increased perceptions of interactivity lead to a positive Aws (Jee & Lee, 2002; Wu, 2005; Yoo & Stout, 2001). Of particular importance is the finding that perceived interactivity, rather than structural interactivity, is a robust determinant of Aws (McMillan, Hwang, & Lee, 2003). This finding suggests that the effects of interactivity are more appropriately understood as a perceptual variable that is constrained by what individuals perceive as being interactive, as opposed to an element of a website's features (McMillan & Hwang, 2002; McMillan et al., 2003; Wu, 2005). In line with this view, this study focuses on the concept of control as experienced by users (i.e., perceived control), rather than the one determined by a

technological structure of a website. Specifically, in this study, perceived control is defined as a consumer's belief that s/he can exert control over the interactions with a product presented online.

Despite the established link between perceived interactivity and Aws, little research has been done to understand the specific role that perceived control plays in forming Aws. Although not directly studying Aws, available research suggests that perceived control can be a powerful concept that helps explain consumers' responses to websites. Dabholka and Sheng (2009), for example, reported that perceived control was a strong mediator in relaying the impact of the perceived speed of website download on consumers' attitudes and intentions to use websites. Wang (2010) also found that perceived control was directly related to consumers' online patronage intentions toward websites. Thus, the following hypothesis is formulated.

**H1:** Perceived control will be positively related to consumers' Aws.

## Mediation Processes

If perceived control fosters a formation of a favorable Aws, then the underlying processes through which such perception affects Aws become a major interest. Two constructs that may explain these processes are consumers' emotional responses to the website and the

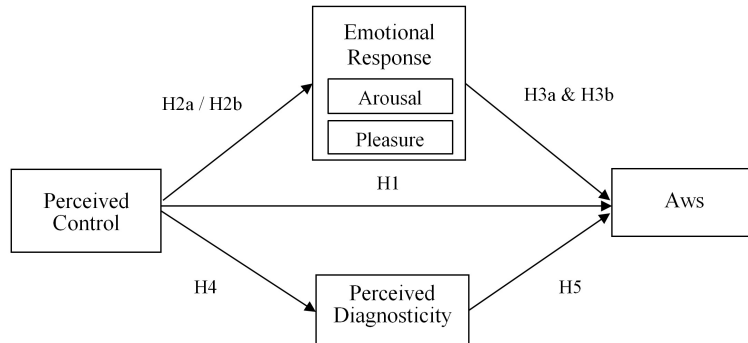


Figure 1. Proposed Research Model

perceived diagnosticity of the website as a product evaluation tool. The proposition of emotions and perceived diagnosticity as mediators is compatible with the premise that attitudes are a combination of affective responses and cognitive evaluations (Batra & Ahtola, 1990; Fishbein & Ajzen, 1975), and more specifically, the evidence that both affective and cognitive responses are two integral parts of user experience in human-computer interaction (Cyr, Head, & Ivanov, 2009) and online shopping (Childers, Carr, Peck, & Carson, 2001). In this study, emotional responses and perceived diagnosticity are posited to represent the affective and cognitive components of attitude formation, respectively. Figure 1 displays the proposed model through which the hypotheses of this study are effectively tested.

In a real, offline service setting, perceived control has been shown to lead to consumers' positive emotional responses, such as pleasure and arousal, during a service encounter. Hui and Bateson (1991), for example, reported that

increased perceptions of control caused by providing a choice in a service situation (e.g., where to stay) led to greater pleasantness of the service experience, thus resulting in the consumer's stronger approach response to that encounter. Likewise, in a field study involving visits to various fast food restaurants, Ward and Barnes (2001) found that consumers who felt in control in a store environment were more pleased, aroused, and involved. Perceptions of control in a service environment is likely to evoke emotional responses since these perceptions are related to the consumer's assessment of whether the environment will facilitate or inhibit goal achievement (Ward & Barnes, 2001). More specifically, an environment perceived as assisting goal achievement produces pleasure and arousal, while an environment perceived as impeding goal achievement evokes the opposite effects. In the context of e-commerce, a navigational design of a website facilitating user control has been shown to enhance enjoyment of the online experience (Childers et al., 2001) and also help

the user experience flow, an “optimal experience” where people become so intensely involved in an activity that “nothing else seems to matter” (Csikszentmihalyi, 1990, p. 4; Hoffman & Novak, 1996). More relevant, enhanced user control via object interactivity applications, such as 3D product visualization and virtual try-on, has been shown to produce feelings of pleasure and enjoyment (Fiore, Jin, & Kim, 2005; Jiang & Benbasat, 2007). Thus, emotional responses to control perceptions appear to be transferable across different contexts, both offline and online.

As for the specific dimensions of emotions, this study focuses on pleasure and arousal since these two affective dimensions have been identified as the major components of consumers’ emotional responses to both advertising (Olney, Holbrook, & Batra, 1991) and consumption experience (Havlena & Holbrook, 1986; Mano & Oliver, 1993).

Based on the above discussions, the following hypothesis is formulated.

**H2:** Perceived control will be positively related to consumers’ emotional responses, specifically, arousal **(a)** and pleasure **(b)**.

Once evoked, emotions become associated with the website. Over the years, researchers have suggested that ad-induced emotions can influence attitudes toward the ad (Aaker, Stayman, & Hagerty, 1986; Batra & Ray, 1986; Burke & Edell, 1989; Edell & Burke, 1987; Holbrook &

Batra, 1987). Specifically, positive emotional responses (e.g., amused, happy, elated) are associated with a favorable attitude toward the ad, whereas negative emotional responses (e.g., skeptical, offended) are associated with an unfavorable attitude toward the ad (Burke & Edell, 1989). Given that websites resemble and reflect the characteristics of traditional ads (Singh & Dalal, 1999), similar effects of emotions on Aws are also expected. The following hypothesis reflects this proposition.

**H3:** Consumers’ emotional responses, specifically, arousal **(a)** and pleasure **(b)**, will be positively related to Aws.

The primary appeal of interactivity in an online environment is to enhance user control, enabling users to have a customized browsing experience based on their individual and unique informational needs and interests (Jiang & Benbasat, 2005; Liu & Shrum, 2002). In general, a communication system capable of accommodating users’ heterogeneous and dynamic informational needs has been shown to result in improved user satisfaction and decision quality (Ariely, 2000; Haubl & Trifts, 2000). More relevant, and in the specific context of online shopping, object interactivity has been found to be associated with the increased diagnostic value of a website as a product evaluation tool (Jiang & Benbasat, 2005; Lee, 2012). Lee (2012), for example, reported that compared with a static

2D product interface, a 3D product interface equipped with various inspection modalities (e.g., zoom-in or out, rotating, customization) was judged as being more relevant and helpful, thus diagnostic, for product evaluation. Once given interactive 3D features, consumers are able to selectively obtain the information most suited for their informational needs. Furthermore, the whole process can be done at a pace and in a sequence of each consumer's own choice (Daugherty, Li, & Biocca, 2008). Although not directly testing the impact of perceived control, considering that providing choice can augment a consumer's sense of control (Ariely, 2000; Hui & Bateson 1991), Lee's study (2012) appears to suggest that it is the perception of control caused by providing choice via object interactivity that can lead to a consumer's assessment of a website experience as being diagnostic for product evaluation.

Consistent with prior research (Jiang & Benbasat, 2005; Kempf & Smith, 1998), in this study, perceived diagnosticity is defined as the degree to which consumers believe that a particular online shopping experience is helpful to understand products presented online. At the operational level, perceived diagnosticity represents the perceived ability of a website to provide relevant product information that helps consumers accurately evaluate product attributes (Jiang & Benbasat, 2005; Lee, 2012).

Based on the above discussions, the following hypothesis is formulated.

**H4:** Perceived control will be positively related to perceived diagnosticity of a website.

Finally, the extent to which a website is perceived as diagnostic for product evaluation is likely to be positively related to Aws as a more diagnostic website helps a consumer make informed purchase decisions. Prior research indicates that effective delivery of product information conducive to decision-making is a critical determinant to users' perceived value of a commercial website (Huizingh, 2000; Keeney, 1999). Hence, a website seen as capable of effectively providing product information on demand is expected to be positively evaluated as a tool for product evaluation. The last hypothesis of this study reflects this proposition.

**H5:** Perceived diagnosticity of a website will be positively related to Aws.

## Methods

### Participants

A total of 142 undergraduate students participated in the study in return for class credit. A student sample was judged appropriate as they generally have high computer literacy and have been early adopters of e-commerce using virtual reality technologies. The sample was slightly overrepresented with males (61%),

had a mean age of 21.5 years ( $SD = 1.51$ ), and spent an average of 16.7 hours per week on the Internet.

### Stimulus Material and Procedures

To create variation in perceived control, two versions of a product website that differed in object interactivity (Schlosser, 2003; 2006) were developed. Object interactivity deemed appropriate since it allows for the active manipulation of an object represented in a virtual world with increased controllability (Schlosser, 2006). All features were identical on both websites except the capacity to manipulate a product presented online. Specifically, 3D product visualization (Yoon, Laffey, & Ho, 2008), a popular form of object interactivity, was utilized to create the object interactive site, where participants were able to move, zoom in or out, and rotate the product. In contrast, the passive site used a set of 2D still photos to present the same product. A digital camera was selected as a stimulus product category mainly because it represents a product category whose salient features can be adequately evaluated with object interactivity without necessarily needing tactile inspection (Li, Daugherty, & Biocca, 2002). A pretest ( $n = 37$ ) also indicated that the category is relevant and interesting to the intended population (i.e., undergraduate students). Product attributes were also identified in the pretest using free elicitations, where participants

were asked to list product attributes that they thought mattered. A total of 18 attributes were identified, among which the six most salient attributes (quality, size/weight, price, ease of use, design, battery life) were used, along with a company logo, a headline, and a sub-headline to construct the stimulus websites. A real brand digital camera brand, Kodak, was used to increase the legitimacy of the study.

The experiment was conducted in a computer lab. The first screen in the computer display explained that the study concerned the evaluation of a product website and upon completion of the website viewing, the participants would be asked to report their thoughts and opinions about the website and the product presented on the website (Kempf & Smith, 1998). After four minutes, the time allowance determined in the pretest as appropriate for exploring and reflecting on the product presented, the participants were asked to respond to questions relating to the variables of the study.

The participants were randomly assigned to one of the two websites, either the object interactive or the passive site. A four-item scale designed to tap perceived control (see Measures of exogenous variables) revealed that a significant difference existed between the participants exposed to the object interactive site and those exposed to the passive site in terms of perceived control. As expected, the object interactive site group had significantly higher perceived control

than the passive site group did ( $M's = 5.74$  vs.  $3.21$ ,  $t = 18.49$ ,  $p < .001$ ), confirming that our attempt to create variation in perceived control via object interactivity was indeed successful. Note that the perceived control scale provided scores for participant-specific control perceptions, and thus, it allowed for testing the effects of perceived control on Aws as well as the causal mechanisms underlying those effects - the main propositions of this study. In this regard, this study departs from the more traditional experimental design approach where stimulus materials are treated as factors. Rather, our two-stimulus treatment performed the function of introducing more variation into the perceived control scale than would have been obtained with only a single stimulus.

## Measures

All items in this study were perceptual measures, and when available, they were drawn from existing and tested scales.

### Measures of exogenous variables

Perceive control was measured with four, 7-point Likert items, adapted from Liu (2003). The items asked, "I felt that I had a lot of control over my viewing experiences at this website," "While I was on the website, I could choose freely what I wanted to see," "I had absolutely no control over what I do on the website," and "My actions decided the kind of

experiences I got from the website." Coefficient  $\alpha$  for the perceived scale was .80.

Since a real brand name was used as a test brand, brand familiarity was measured as a control. Varying levels of participants' familiarity with the test brand may be related to their perceptions of website capability to facilitate product understanding, indicating the need to control participants' prior familiarity with the test brand. Brand familiarity was assessed with three, 7-point semantic differential items, bounded by "Familiar - Unfamiliar," "Inexperienced - Experienced," and "Not knowledgeable - Knowledgeable." Coefficient  $\alpha$  for the scale was .93. In addition, the extent to which the website is organized was measured as another control with a single, 7-point Likert item that asked: "The website I just visited is well organized."

### Measures of endogenous variables

Pleasure and arousal were measured with five, 7-point semantic differential items, adopted from Kempt and Smith (1998). The items for pleasure were "Happy - Unhappy," "Pleased - Annoyed," and the items for arousal were "Excited - Calm," "Stimulated - Relaxed," and "Aroused - Unaroused." Coefficient  $\alpha$ 's were .86 and .78 for the pleasure and arousal scales, respectively.

Based on Lee (2012), Jiang and Benbasat (2005), and Kempf and Smith (1998), perceived diagnosticity was measured using three, 7-point



semantic differential items that asked: “In judging the quality and performance of the product presented, overall, how helpful would you rate the website? Not helpful at all - Extremely helpful,” “In understanding different features of the product presented, overall, how helpful would you rate the product information from the website? Not helpful at all - Extremely helpful,” and “To what extent did the website enable you to accurately evaluate the product presented? It did not enable me to evaluate the product at all - It fully enabled me to evaluate the product.” Coefficient  $\alpha$  for the scale was .87.

Aws was measured using the well-established Chen and Wells’(1999) attitude toward the site scale, consisting of five, 7-point Likert items and one, 7-point semantic differential item. Coefficient  $\alpha$  for the Aws scale was .87.

## Results

As Table 1 shows, perceived control was positively correlated with pleasure ( $r = .60, p < .001$ ), arousal ( $r = .55, p < .001$ ), and perceived diagnosticity ( $r = .65, p < .001$ ) and in turn, these three variables were positively correlated with Aws ( $r = .75, p < .001$  for pleasure;  $r = .53, p < .001$  for arousal;  $r = .77, p < .001$  for perceived diagnosticity), thus suggesting their potential function as mediators for the relationship between perceived control and Aws. Brand familiarity, one of the two control variables of the study, was not correlated with any of the variables and thus excluded from further analysis.

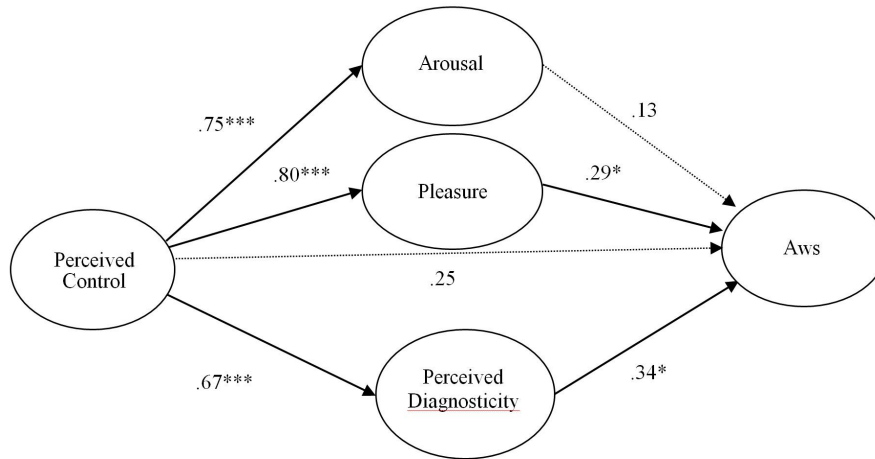
The proposed research model was tested using AMOS, with maximum-likelihood (ML) parameter estimation. Because sample size was rather small for hybrid structural equation model testing, a latent composite approach (Coffman &

Table 1. Descriptive Statistics and Correlations of Model Constructs

Model Constructs	Mean	SD	1	2	3	4	5	6	7
1. Perceived Control	4.47	1.51	(.80)						
2. Pleasure	5.22	1.15	.60***	(.86)					
3. Arousal	4.08	1.52	.55***	.52***	(.78)				
4. Perceived Diagnosticity	5.06	.95	.65***	.64***	.42***	(.87)			
5. Aws	4.84	1.17	.72***	.75***	.53***	.77***	(.87)		
6. Brand Familiarity	4.01	1.57	.13	.13	.14	.09	.17	(.93)	
7. Site Organization	5.90	.91	.46***	.18	.17	.61***	.61***	.07	(n.a.)

Note: N=142; numbers in parentheses are Coefficient  $\alpha$ ; n.a. = Coefficient  $\alpha$  is not available.

\*\*\* $p < .001$



$\chi^2 = 19.54, df = 4, p < .01; SRMR = .05; CFI = .97; TLI = .88$

Figure 2. Results of Standardized AMOS Analysis (Proposed Research Model)

MacCallum, 2005; Stephenson & Holbert, 2003) was employed instead. A latent composite approach is “a marked improvement over an observed variable approach” (Stephenson & Holbert, 2003, p.336). Specifically, each of the model variables, except site organization, was represented by the sum of the scale items. Measurement error was reflected on the model by fixing the path coefficient from the latent construct to its indicator to one and then fixing the error variance of each indicator to  $(1 - \text{reliability})$  times the variance of the summed scale. Site organization was represented as a single-item latent variable with no measurement error. As hypothesized, perceived control was entered as the predictor variable; pleasure, arousal, and perceived diagnosticity were entered as mediators; Aws was entered as the criterion variable; and site organization was entered as a

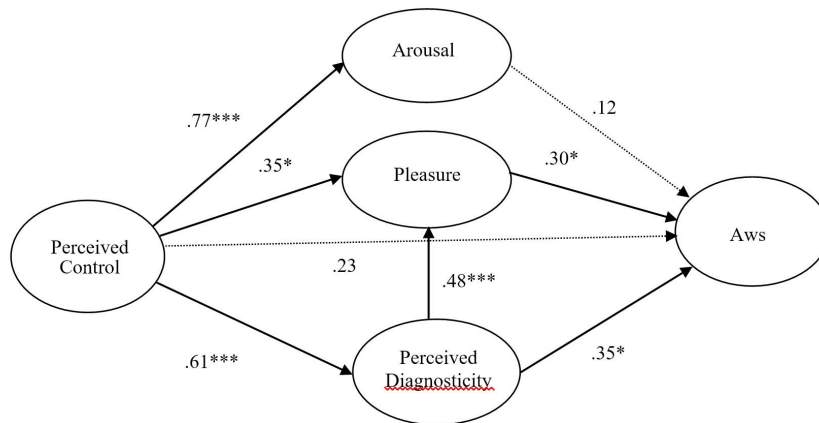
control for perceived diagnosticity and Aws. The standardized estimated model is presented in Figure 2.

Based on the recommendations of Holbert and Stephenson (2002) and Hu and Bentler (1999) for a sample less than 200, model fit was assessed using the  $\chi^2$  goodness of fit test, the comparative fit index (CFI), the Tucker-Lewis index (TLI) and the standardized root mean squared residual (SRMR), with cut off points of .95 for CFI and TLI, and .08 for SRMR. Inspection of fit indices indicated that although the proposed research model met the criteria of an adequate model fit on CFI and SRMR ( $\chi^2 = 19.54, df = 4, p < .01; CFI = .97; SRMR = .05$ ), the value of TLI was below the cutoff point of .95 (TLI = .88), suggesting a need for respecification. Therefore, the modification indices were examined for

theoretically appropriate paths, among which adding a path from perceived diagnosticity to pleasure was deemed theoretically justified. Higher perceived diagnosticity means that consumers believe that a website facilitates their product understanding, thereby enabling them to make more informed purchase decisions. Thus, the resulting experience should be a pleasant and rewarding one since the time and effort spent on product inspection is well justified. In contrast, a website perceived as lacking diagnosticity may cause dissatisfaction and even frustration since such a website is seen as ineffective and inefficient in assisting consumers to accomplish their shopping goals. Supporting this reasoning, an interactive system with high levels of perceived usability has been shown to lead to more positive emotional reactions (Seo,

Lee, Chung, & Park, 2015). The final model based on this modification fits the data very well ( $\chi^2 = 10.03$ ,  $df = 3$ ,  $p < .05$ ; CFI = .99; TLI = .95; SRMR = .03). The chi-square difference test also indicated that adding the path significantly improved the fit of the model to the data ( $\Delta\chi^2 = 9.51$ ,  $p < .01$ ). The model accounted for 82% in the measure of Aws.

The final estimated model appears in Figure 3. Site organization, the control variable, was positively related to perceived diagnosticity ( $\beta = .37$ ,  $p < .001$ ). Site organization was also positively associated with Aws, but the path coefficient failed to reach significance at the .05 level ( $\beta = .12$ ,  $p = .07$ ). It appears likely that with a larger sample, this relationship would have been significant. More importantly, also unexpectedly, perceived control was not related



$\chi^2 = 10.03$ ,  $df = 3$ ,  $p < .05$ ; SRMR=.03; CFI = .99; TLI=.95

Note for Figures 2 & 3: N=142; Solid lines indicate significant paths and dotted lines indicate nonsignificant paths at  $\alpha = .05$ ; the control variable (Site Organization) was not shown for simplicity.  
\* $p < .05$ , \*\*\* $p < .001$

Figure 3. Results of Standardized AMOS Analysis (Final Model)

to Aws. Although the sign of the path coefficient was in the predicted direction, it failed to reach significance at the .05 level ( $\beta = .23, p = .15$ ), thus disconfirming H1. As expected, perceived control positively influenced arousal ( $\beta = .77, p < .001$ ) and pleasure ( $\beta = .35, p < .05$ ), thus confirming H2(a) and H2(b). Subsequently, pleasure was positively related to Aws ( $\beta = .30, p < .05$ ). Thus, H3(b) was confirmed. Unexpectedly, however, arousal was not related to Aws. The size of the path coefficient was tiny and was far from being

significant ( $\beta = .12, p = .39$ ). Thus, H3(a) was not confirmed. In addition, as predicted, perceived control positively influenced perceived diagnosticity ( $\beta = .61, p < .001$ ) that was a significant and positive predictor for Aws ( $\beta = .35, p < .05$ ), thus offering support for both H4 and H5. Furthermore, perceived diagnosticity positively influenced pleasure ( $\beta = .48, p < .001$ ), which was positively related to Aws.

To examine the significance of the mediation effects, the Sobel's test (Baron & Kenny, 1986) was performed (Table 2). A summary of the

Table 2. Results of Indirect Effects Test

Causal links	Sobel test statistic	<i>p</i>
Perceived Control → Pleasure → Aws	2.36	< .05
Perceived Control → Perceived Diagnosticity → Aws	2.34	< .05
Perceived Control → Perceived Diagnosticity → Pleasure → Aws <sup>a</sup>	n.a.	n.a.

Note: n. a. = not available; <sup>a</sup>Given that the causal link involves two mediators, its significance was not directly tested. Instead, the indirect effect was simply assumed significant since all of its component paths were significant (Kline 1998).

Table 3. Effects Decomposition for Final Model (N=142)

Predictors	Endogenous Variables											
	Pleasure			Arousal			Perceived Diagnosticity			Aws		
	DE	IE	TE	DE	IE	TE	DE	IE	TE	DE	IE	TE
Perceived Control	.35	.29	.64	.77	-	.77	.61	-	.61	.23 <sup>n.s.</sup>	.50	.73
Pleasure	-	-	-	-	-	-	-	-	-	.30	-	.30
Arousal	-	-	-	-	-	-	-	-	-	.12 <sup>n.s.</sup>	-	.12 <sup>n.s.</sup>
Perceived Diagnosticity	.48	-	.48	-	-	-	-	-	-	.35	.15	.50

Note: DE = Direct Effect, IE = Indirect Effect, TE = Total Effect; All coefficients are significant at  $\alpha = .05$  unless otherwise noted; n.s. = not significant at  $\alpha = .05$ .

analysis of the effects decomposition is also shown in Table 3. All the paths involved in each of the causal links were positive and substantial, resulting in significant, positive, indirect effects of perceived control on Aws (indirect effect size: .11 for perceived control  $\rightarrow$  pleasure  $\rightarrow$  Aws; indirect effect size: .21 for perceived control  $\rightarrow$  perceived diagnosticity  $\rightarrow$  Aws; indirect effect size: .09 for perceived control  $\rightarrow$  perceived diagnosticity  $\rightarrow$  pleasure  $\rightarrow$  Aws). Thus, both pleasure and perceived diagnosticity successfully transmitted the effects of perceived control on Aws.

Overall, these results indicate that pleasure and perceived diagnosticity fully mediate the relationship between perceived control and Aws.

## Discussion

Despite a considerable amount of research available on the effects of perceived interactivity as a composite measure, there is a relative paucity of research concerning the specific role that perceived control plays in shaping consumer responses in an e-commerce environment and in particular its underlying working mechanisms. To fill this gap in the literature, this study set out to unravel whether and how perceived control affects Aws in the online shopping environment. The results indicated that perceived control elicited by an interactive 3D product interface was positively associated with Aws and notably,

all of its effects on Aws were transmitted through pleasure and perceived diagnosticity. Substantively, these findings mean that the participants who felt in charge of the interactions with the product presented online reported more pleasure toward the website experience, as well as an improved diagnostic value toward the website as a product evaluation tool, thereby resulting in a more positive response toward the website, compared with those who had a lower sense of control. As far as we are aware, this study represents one of the first attempts to empirically test the underlying effects of perceived control on Aws in the context of e-commerce.

This study has several important contributions, both theoretical and practical. First and foremost, this study points to the significance of perceived control as a central construct in the online shopping environment, capable of triggering the web ad hierarchy of effects (i.e.,  $Aws \rightarrow Aad \rightarrow Ab \rightarrow PI$ , Bruner II & Kumar, 2000). The practical implication of this finding is straightforward: Online marketers should put more effort into increasing perceptions of control since these are strongly related to outcomes of critical importance to marketers. Understandably, marketers desire to have total control, and thus they hesitate to convey a sense of control to their consumers. Yet, as noted by Deighton and Kornfeld (2009), in today's Internet-enabled marketing environment, the balance of power over marketplace meaning-making is shifting

from the marketer to the consumer, and this new marketplace tends to reward more participatory and less directive marketing styles. The results of this study add further evidence to these significant changes occurring in the marketplace by demonstrating positive returns on consumer feelings of control with respect to consumer feelings about and reactions to the online environment. It bears noting that although this study employed 3D product visualization, a popular form of object interactivity, as a means to induce perceived control, there exist other ways to boost such perception. These include, but are not limited to, virtual reality applications, such as virtual try-on, and different product selection protocols, including assortment, personalization, and customization (Godek & Yates, 2005). Future research may examine whether these applications differ in terms of their ability to foster control perceptions in the context of online shopping. Second, the observed role of pleasure as a mediator in this study extends the previous work in an offline context, which observes that perceived control in a retail environment entails positive affect that results in consumer favorable attitudes toward the retailer (Ward & Barnes, 2001). This finding is significant since it suggests that the perceived control-affect-response link is transferable across different contexts, both offline and online. Third, the finding that perceived diagnosticity successfully conveys the remaining effects of perceived control on Aws

directly, as well as indirectly through its association with pleasure, confirms the status of perceived diagnosticity as a robust mediator of virtual product experience (Jiang & Benbasat, 2005; Lee, 2012). As a whole, these results appear to be in line with the proposition that both affective and cognitive responses are two integral parts of user experience in human-computer interaction (Cyr, Head, & Ivanov, 2009).

Interestingly, and unexpectedly, the proposed mediating role of arousal was not supported in this study. Despite a significantly positive impact of perceived control on arousal, arousal failed to influence Aws at the conventional significance level of .05 ( $p = .39$ ). Although speculative, it may simply reflect an artifact of levels of arousal elicited in this study not being high enough to produce the hypothesized effect ( $M = 4.08$ ,  $SD = 1.52$ ). Alternatively, the null finding might be attributable to the fact that there are individual differences in people's preferences for arousal due to individual predispositions (e.g., OSL: optimum stimulation level) or the effects of the person's everyday life (Mahrabian, Wihardja, & Ljunggren, 1997). Possibly, in this study, arousal led to positive responses to high-OSL individuals, who desire stimulation, whereas it had a detrimental effect on low-OSL individuals (Fiore et al., 2005), thus producing the resultant non-significant effect of arousal on Aws. This scenario is plausible, but not tested in this study. Thus, it is unclear whether, and if so

to what extent, if any, such scenario actually occurred in this study. Future research could measure participants' OSL levels in an attempt to draw a firmer conclusion on this particular issue.

This study has a few limitations that open up useful opportunities for new research. First, this study focused on only one product category. Whether similar findings would generalize to other types of products is an open question, worthy of further investigation. In particular, considering the two-faceted view of utilitarian and hedonic product evaluation (Batra and Ahtola, 1990), it would be interesting to see whether the product being examined is perceived as utilitarian or hedonic would alter the interrelationships among the constructs observed here. Perhaps, emotional responses would become more important for hedonic products, where the sensory and experiential aspects of consumption matter (Hirschman & Holbrook, 1982), compared to an utilitarian product, whose purpose of consumption is primarily functional and goal-driven (Dhar & Wertenbroch, 2000; Hirschman & Holbrook, 1982). Second, relatedly, examining a moderating role of motivational orientations underlying consumers' shopping behavior, either utilitarian or hedonic (Babin, Darden, & Griffin, 1994), would be another avenue of significance for future research. It may be that given their focus on the instrumental aspect, utilitarian consumers vs. hedonic consumers are more appreciative of a shopping

environment that facilitates perceptions of control during their shopping experience. Future research incorporating multiple product types and differential shopper motivations that vary on the hedonic-utilitarian continuum will shed light on the boundary conditions for the effects of perceived control. Lastly, unexpectedly, in this study, the direct effect of perceived control on Aws was not significant. Although the sign of the path coefficient was in the predicted direction, it failed to reach significance at the .05 level ( $\beta = .23, p = .15$ ). The null finding may stem from idiosyncratic interactions of the brand, the design, and the measures employed in this study. Evidently, more research is warranted to replicate the finding.

In conclusion, the findings of this study suggest (a) that perceived control, elicited by an interactive 3D product interface, is positively related to consumers' Aws and (b) that pleasure and perceived diagnosticity as well as their interaction completely account for the effect of perceived control on Aws. Although there have been many speculations about the growing significance of consumer feelings in control in today's Internet-enabled, increasingly consumer-empowered marketing environments, this study is one of the first studies that provide empirical evidence on whether and how perceived control influence consumer reactions to such environments. Advertisers and marketers who wish to effectively respond to the shift taking place in the current marketplace will find the

findings of this study useful.

### References

- Aaker, D. A., Stayman, D. M., & Hagerty, M. R. (1986). Warmth in advertising: measurement, impact and sequence effects. *Journal of Consumer Research*, 12(4), 365-381.
- Ariely, D. (2000). Controlling the information flow: Effects on consumers' decision making and preferences. *Journal of Consumer Research*, 27(2), 233-248.
- Babin, B. J., Darden, W. R., & Griffin, M. (1994). Work and/or fun: Measuring hedonic and utilitarian shopping value. *Journal of Consumer Research*, 20(4), 644-656.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Batra, R., & Ahtola, O. T. (1990). Measuring the hedonic and utilitarian sources of consumer attitudes. *Marketing Letters*, 2(2), 159-170.
- Batra, R., & Ray, M. L. (1986). Affective responses mediating acceptance of advertising. *Journal of Consumer Research*, 13(2), 234-249.
- Bilgihan, A., Kandampully, J., & Zhang, T. (2016). Towards a unified customer experience in online shopping environments: Antecedents and outcomes. *International Journal of Quality and Service Sciences*, 8(1), 102-119.
- Bruner II, G. C., & Kumar, A. (2000). Web commercials and advertising hierarchy of effects. *Journal of Advertising Research*, 40(1/2), 35-44.
- Burke, M. C., & Edell, J. A. (1989). The impact of feelings on ad-based affect and cognition. *Journal of Marketing Research*, 26(1), 69-83.
- Chen, Q., & Wells, W. D. (1999). Attitude toward the site. *Journal of Advertising Research*, 39(5), 27-37.
- Childers, T. L., Carr, C. L., Peck, J., & Carson, S. (2001). Hedonic and utilitarian motivations for online retail shopping behavior. *Journal of Retailing*, 77(4), 511-535.
- Coffman, D. L., & MacCallum, R. C. (2005). Using parcels to convert path analysis models into latent variable models. *Multivariate Behavioral Research*, 40(2), 235-259.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper and Row.
- Cyr, D., Head, M., & Ivanov, A. (2009). Perceived interactivity leading to e-loyalty: Development of a model for cognitive-affective user responses. *International Journal of Human-Computer Studies*, 67(10), 850-869.
- Dabholkar, P. A., & Sheng, X. (2009). The role of perceived control and gender in consumer reactions to download delays. *Journal of Business Research*, 62, 756-760.
- Daugherty, T., Li, H., & Biocca, F. (2008). Consumer learning and the effects of virtual experience relative to indirect and direct product experience. *Psychology and Marketing*, 25(7), 568-586.
- Deighton, J., & Kornfeld, L. (2009). Interactivity's



- unanticipated consequences for marketers and marketing. *Journal of Interactive Marketing*, 23(1), 4-10.
- Dhar, R., & Wertenbroch, K. (2000). Consumer choice between hedonic and utilitarian goods. *Journal of Marketing Research*, 37(1), 60-71.
- Edell, J. A., & Burke, M. C. (1987). The power of feelings in understanding advertising effects. *Journal of Consumer Research*, 14(3), 421-433.
- Fiore, A. M., Jin, H.-J., & Kim, J. (2005). For fun and profit: Hedonic value from image interactivity and responses toward an online store. *Psychology and Marketing*, 22(8), 669-694.
- Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.
- Godek, J., & Yates, J. F. (2005). Marketing to individual consumers online: The influence of perceived control. In C. P. Haugtvedt, K. A. Machleit & R. Yalch (Eds.), *Online consumer psychology: Understanding and influencing consumer behavior in the virtual world* (pp. 225-244). Mahwah, NJ: Lawrence Erlbaum Associates.
- Haubl, G., & Trifts, V. (2000). Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing Science*, 19(1), 4-21.
- Havlena, W. J., & Holbrook, M. B. (1986). The varieties of consumption experience: Comparing two typologies of emotion in consumer behavior. *Journal of Consumer Research*, 13(3), 394-404.
- Hirschman, E. C., & Holbrook, M. B. (1982). Hedonic consumption: Emerging concepts, methods and propositions. *Journal of Marketing*, 46(3), 92-101.
- Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing*, 60(3), 50-68.
- Hoffman, D. L., Novak, T. P., & Schlosser, A. E. (2003). Locus of control, web use, and consumer attitudes toward internet regulation. *Journal of Public Policy & Marketing*, 22(1), 41-57.
- Holbert, R. L., & Stephenson, M. T. (2002). Structural equation modeling in the communication sciences, 1995-2000. *Human Communication Research*, 28(4), 531-551.
- Holbrook, M. B., & Batra, R. (1987). Assessing the role of consumer responses to advertising. *Journal of Consumer Research*, 14(3), 404-419.
- Hu, L.-t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55.
- Hui, M. K., & Bateson, J. E. G. (1991). Perceived control and the effects of crowding and consumer choice on the service experience. *Journal of Consumer Research*, 18(2), 174-184.
- Huizingh, E. K. (2000). The content and design of web sites: An empirical study. *Information & Management*, 37(3), 123-134.
- Jee, J., & Lee, W.-N. (2002). Antecedents and consequences of perceived interactivity: An exploratory study. *Journal of Interactive Advertising*, 3(1), 34-45.
- Jiang, Z., & Benbasat, I. (2005). Virtual product experience: Effects of visual and functional

- control of products on perceived diagnosticity and flow in electronic shopping. *Journal of Management Information Systems*, 21(3), 111-147.
- Jiang, Z., & Benbasat, I. (2007). Investigating the influence of the functional mechanisms of online product presentations. *Information Systems Research*, 18(4), 454-470.
- Kamis, A., Stern, T., & Ladik, D. M. (2010). A flow-based model of web site intentions when users customize products in business-to-consumer electronic commerce. *Information Systems Frontiers*, 12(2), 157-168.
- Keeney, R. L. (1999). The value of Internet commerce to the customer. *Management Science*, 45(4), 533-542.
- Kempf, D. S., & Smith, R. E. (1998). Consumer processing of product trial and the influence of prior advertising: A structural modeling approach. *Journal of Marketing Research*, 35(3), 325-338.
- Klimmt, C., Hartmann, T., & Frey, A. (2007). Effectance and control as determinants of video game enjoyment. *Cyberpsychology & Behavior*, 10(6), 845-847.
- Lee, K.-Y. (2012). Consumer processing of virtual experience in e-commerce: A test of an integrated framework. *Computers in Human Behavior*, 28, 2134-2142.
- Li, H., Daugherty, T., & Biocca, F. (2002). Impact of 3-D advertising on product knowledge, brand attitude, and purchase intention: The mediating role of presence. *Journal of Advertising*, 31(3), 43-57.
- Liu, Y. (2003). Developing a scale to measure the interactivity of websites. *Journal of Advertising Research*, 43(2), 207-216.
- Liu, Y., & Shrum, L. J. (2002). What is interactivity and is it always such a good thing? Implications of definition, person, situation for the influence of interactivity on advertising effectiveness. *Journal of Advertising*, 31(4), 53-64.
- Mahrabian, A., Wihardja, C., & Ljunggren, E. (1997). Emotional correlates of preferences for situation-activity combinations in everyday life. *Genetic, Social, and General Psychology Monographs*, 123(4), 461-477.
- Mano, H., & Oliver, R. L. (1993). Assessing the dimensionality and structure of the consumption experience: Evaluation, feeling, and satisfaction. *Journal of Consumer Research*, 20(3), 451-466.
- McMillan, S. J., & Hwang, J.-S. (2002). Measures of perceived interactivity: An exploration of the role of direction of communication, user control, and time in shaping perceptions of interactivity. *Journal of Advertising*, 31(3), 29-42.
- McMillan, S. J., Hwang, J.-S., & Lee, G. (2003). Effects of structural and perceptual factors on attitude toward the website. *Journal of Advertising Research*, 43(4), 400-409.
- Olney, T. J., Holbrook, M. B., & Batra, R. (1991). Consumer responses to advertising: The effects of ad content, emotions, and attitude toward the ad on viewing time. *Journal of Consumer Research*, 17(4), 440-453.
- Pavlou, P. A., & Stewart, D. W. (2000). Measuring the effects and effectiveness of interactive advertising: A research agenda.

- Journal of Interactive Advertising*, 1(1), 61-77.
- Rodgers, S., & Thorson, E. (2000). The interactive advertising model: How users perceive and process online ads. *Journal of Interactive Advertising*, 1(1), 41-60.
- Schlosser, A. E. (2003). Experiencing products in the virtual world: The role of goal and imagery in influencing attitudes versus purchase intention. *Journal of Consumer Research*, 30(2), 184-198.
- Schlosser, A. E. (2006). Learning through virtual product experience: The role of imagery on true versus false memories. *Journal of Consumer Research*, 33(3), 377-383.
- Seo, K.-K., Lee, S., Chung, B. D., & Park, C. (2015). Users' emotional valence, arousal, and engagement based on perceived usability and aesthetics for web sites. *International Journal of Human-Computer Interaction*, 31(1), 72-87.
- Singh, S. N., & Dalal, N. P. (1999). Web home pages as advertisements. *Communications of the ACM*, 42(8), 91-98.
- Song, J. H., & Zinkhan, G. M. (2008). Determinants of perceived web site interactivity. *Journal of Marketing*, 72(2), 99-113.
- Stephenson, M. T., & Holbert, R. L. (2003). A Monte Carlo simulation of observable versus latent variable structural equation modeling techniques. *Communication Research*, 30(3), 332-354.
- Wang, E. S.-T. (2010). The effects of browsing frequency and gender on the relationship between perceived control and patronage intentions in E-tail. *International Journal of Electronic Commerce*, 14(3), 129-144.
- Ward, J. C., & Barnes, J. W. (2001). Control and affect: The influence of feeling in control of the retail environment on affect, involvement, attitude, and behavior. *Journal of Business Research*, 54(2), 139-144.
- Wu, G. (2005). The mediating role of perceived interactivity in the effect of actual interactivity on attitude toward the website. *Journal of Interactive Advertising*, 5(2), 29-39.
- Yoo, C. Y., & Stout, P. A. (2001). Factors affecting users' interactivity with the web site and the consequences of users' interactivity. *Proceedings of the 2001 Conference of the American Academy of Advertising*, 53-60.
- Yoon, S.-Y., Laffey, J., & Ho, H. (2008). Understanding usability and user experience of web-based 3D graphics technology. *International Journal of Human-Computer Interaction*, 24(3), 288-306.
- 원 고 접 수 일 : 2016. 07. 05.  
수정원고접수일 : 2016. 08. 19.  
게 재 결 정 일 : 2016. 08. 26.

## 지각된 통제감이 제품 웹사이트에 대한 태도에 미치는 영향: 감정적 반응과 웹사이트 진단가능성의 매개적 역할을 중심으로

이 기 영<sup>1)</sup> 이 두 황<sup>2)</sup> 이 진 균<sup>1)</sup> 주 성 희<sup>3)</sup>

<sup>1)</sup>홍익대학교 광고홍보학부

<sup>2)</sup>경희대학교 언론정보학과

<sup>3)</sup>정보통신정책연구원 방송미디어연구실

본 연구는 온라인 쇼핑 시 제품을 탐색하는 과정에서 소비자가 지각하는 통제감(perceived control)이 해당 제품 사이트에 대한 소비자의 평가에 미치는 영향을 실증적으로 살펴보고자 하였다. 구체적으로, 상호작용적인 3D 제품인터페이스를 통해 소비자가 지각하는 통제감은 감정적 반응(즐거움과 각성)과 웹사이트 진단가능성(perceived diagnosticity)을 매개로 하여 직, 간접적으로 제품 사이트에 대한 호의적인 태도를 이끌어 낸다는 논제를 제시하고 이를 구조방정식모델을 이용하여 분석하였다. 분석결과, 통제감이 높다고 지각하는 경우 소비자는 웹사이트에 대해 더 긍정적인 평가를 내리고 있으며, 이러한 통제감의 영향력은 즐거움과 진단가능성을 통해 완전 매개(fully mediated)되는 것으로 나타났다. 통제감은 웹사이트에 대한 태도에 직접적으로 영향을 미치지 않는 것으로 나타났으며, 매개변인으로서 각성의 역할 역시 통계적으로 유의미하지 않았다. 온라인 쇼핑환경에서 소비자들이 인식하는 통제감이 주요 마케팅 변수와 밀접하게 관련되어 있음을 보여주는 본 연구의 결과는 온라인 마케터들이 소비자가 느끼는 통제감을 높이는데 더 많은 노력을 경주해야 함을 시사한다.

주제어 : 지각된 통제감, 사이트에 대한 태도(Aws), 감정반응, 웹사이트 진단가능성