The Effects of Website Designs, Self-Congruity, and Flow on Behavioral Intention

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The current study examines the effects of web interface designs on a consumer's behavioral intention in the context of online retailing. In so doing, the study investigates how initial self-congruity and flow affect the ways consumers evaluate interface designs and form a behavioral intention. The analysis was based on 673 responses collected via an online survey evaluating clothing retail sites. The results indicate that a consumer makes an instantaneous judgment of the congruity between the self and the site images immediately upon visiting the site, which in turn biases the way he/she evaluates specific design elements of the website. The results also show that a consumer's flow state with the website mediates the effects of design evaluations on his/her purchase intention from the site. The flow state is most significantly determined by the evaluation of visual elements, followed by information/navigation designs as well as transaction designs.

Keywords **–** Online Stores, Interface Design, Self-congruity, Flow, Behavioral Intention.

Relevance to Design Practice **–** A critical element in the success of online retailing is the way the site's interface is designed. However, it is important for designers and design managers to understand that a consumer's evaluation of interface designs is affected by his/her affective reactions (such as self-congruity and flow) generated before or during the cognitive evaluation process.

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Introduction

With the remarkable growth of Internet users in the past two decades, the Internet has transformed the manner in which individuals identify, communicate, and make purchase decisions. The significance of this phenomenon is underscored by several reports on online retail sales. According to a Pew Internet & American Life Project survey, 52% of Americans reported making online purchases, compared to only 22% in 2000 (Jensen, 2010). Furthermore, e-commerce revenues substantially increased from $7.4 billion in 2000 to $155.2 billion in 2009, and are projected to reach $250 billion by 2014 (Schonfeld, 2010). Not only has the number of consumers shopping online increased, but the number of online retail stores has exploded. Particularly given its relatively low setup cost, online retailing has been an attractive option to both large and small retailers as a way to expand their markets beyond their regional bases.

As much as this hefty market growth is encouraging for online retailers, it also signifies increasing competition among the retailers as consumers can now quickly and easily shop from a seemingly infinite number of online stores. In this competitive landscape, the success of online retailing hinges on ensuring that consumers not only visit a retail site but also spend considerable time exploring and navigating a retailer's virtual marketplace. To accomplish this goal, web designers and design managers must understand the ways in which consumers: choose a particular website among many identified through searches; interact with and evaluate the site's interface design; and make a purchase from it. The current study explores this issue in the context of initial patronage behavior (i.e., buying intention from a site from which they have never made a purchase) by incorporating the concepts of initial self-congruity and flow.

Self-congruity refers to the degree of agreement between a consumer's personality and his or her perceived personality of a product or service (Kressmann et al., 2006). A consumer often perceives a product or a service as having a human-like personality; a consumer tends to evaluate a product or a service positively when the product or the service is seen to have similar characteristics to his or her own personality (Sirgy & Samli, 1985). In fact, positive self-congruity is found to be a significant predictor of a consumer's patronage behavior toward a brand and a store (Sirgy, Grewal, & Mangleburg, 2000; Sirgy, Lee, Johar, & Tidwell, 2008). In the extant literature, however, self-congruity is considered to be the judgment made after consumers walk into a store and explore its retail offerings and designs. Not much attention has been paid to understanding the initial congruity judgment formed almost immediately after visiting a website and the extent to which it might affect a consumer's evaluation of the way the site is designed. Just like the first impression of an

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individual's personality can influence the subsequent judgment of the individual's other qualities, the initial judgment of congruity between the website and the consumer can bias the way the consumer evaluates specific elements of website design. This study will delve into this important aspect of consumer-website interaction.

The success of a retail website is also determined by the extent to which its design enables consumers to have a positive experience and accomplish their consumption goals (Wakefield, Stocks, & Wilder, 2004). Extant literature indicates that four design dimensions significantly influence website success: web aesthetics (visuals), informational content, navigation, and transactional design (Kang, Hong, & Lee, 2009; Lavie & Tractinsky, 2004; Liu & Arnett, 2000; Ranganathan & Ganapathy, 2002). Websites that correctly execute these critical design elements are more likely to attain customer satisfaction, positive purchase intentions, customer loyalty, and ongoing patronage (Bauer, Falk, & Hammerschmidt, 2006; Bhattacherjee, 2002; Kim & Lennon, 2008; Lavie & Tractinsky, 2004). There has been criticism, however, that previous research examining the relationships between website designs and behavioral outcomes has adopted a disproportionately cognitive perspective (Ranganathan & Ganapathy, 2002). That is, the focus has been on understanding how a consumer's cognitive evaluation of site designs affects behavioral intentions. However, there exists an indication that people tend to form a holistic and affective evaluation of a product or service based on performance assessment of specific attributes, and it is this holistic and affective reaction that determines the behavioral intention (Mittal, 1994). In this study, we investigate the concept of flow, the optimal state of focused attention, as a critical affective response generated by the way a website is designed. To this end, we promote the flow concept as a variable mediating the effects of design elements on the behavioral intention.

We test the proposed framework in the context of retail sites for women's apparel without high brand recognitions. Understanding the mechanism of initial purchasing decisions is particularly important for a small-scale web retailer who has to compete against nationally recognized brand name retailers. We also chose apparel as it is one of the most significant physical product categories retailed online, and small to medium sized firms constitute a high proportion in the industry composition (U.S. Census Bureau, 2010). Apparel is also the product category where the self-congruity judgment and design of retail outlets can exert a significant influence on consumers' decision making (Aaker, 1999; Ericksen & Sirgy, 1992; Morganosky, 1990).

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Conceptual Frameworks

Self-Congruity

Consumers often behave in a certain way to express themselves, and they are motivated to confirm their internal self-concepts positively through their behaviors (Kressmann et al., 2006). In this respect, consumer behavior is driven by two basic motivational factors: maintenance/enhancement of self-esteem and self-consistency. Self-esteem is managed through avoidance of behaviors that may lead to self-abasement. For example, if an individual views himself as high status, he will avoid behaviors that would indicate low status (Sirgy, 1982). Self-consistency is maintained by avoidance of dissonance between self-perception and actions. Thus, individuals who identify themselves as high status are motivated to purchase high quality goods over time. If one's self-schema is challenged by incongruent actions, negative affect often results, implying that the need for consistency is an important factor that explains consumer behavior. In fact, Chebat, Sirgy, and St-James (2006) found that self-congruity increases the potential for repeated patronage by enhancing brand loyalty. Kressmann et al. (2006) also reported that customers were motivated to remain loyal to their chosen brands of automobiles based on their sense of self-congruity with those brands; they suggest that consumers are driven to view the brand of car they already own in a positive light, which satisfies their need to maintain self-esteem and ultimately leads to their loyalty toward the brand. Individuals also behave in a way that protects and enhances their self-image (Grubb & Grathwohl, 1967). In a consumer context, both self and products are perceived to have a certain personality (Sirgy & Samli, 1985). Mugge, Govers, and Schoormans (2009), for example, identified 20 scales that can be used to assess product personality, which included cheerful, open, relaxed, pretty, easy-going, and so on. As can be seen here, consumers use similar expressions to describe both product personalities and human personalities. The personality of a product may be derived from specific product attributes, appearances, advertising, and branding strategies designed to reflect the type of current or potential customers of the product. People may also infer the type of customers solicited by a vendor through its environmental cues, such as retail offerings and store designs (Chebat et al., 2006). In an online store context, various elements of web design and product presentation constitute the environmental cues that influence consumers' perceptions of the store's personality. The perceived match or mismatch between a consumer's personality and the website's personality influences the extent

to which the consumer is willing to explore the site. It is thus our contention that examining the level of congruity between an individual's personality and an online store's personality will yield a meaningful explanation of how consumer-website interaction precipitates patronage behavior. In so doing, we focus on understanding the effect of the initial self-congruity judgment (i.e., the first impression of website upon visiting the site) on consumers' evaluations of website design.

The Relationship of Self-Congruity and Website Design Evaluation

While much research examines the direct effect of self-congruity judgment on behavioral outcomes (e.g., Quester, Karunaratna, & Goh, 2000; Zinkhan & Hong, 1991), there is also evidence that self-congruity judgment affects specific product and service evaluations before forming behavioral intentions (Cowart, Fox, & Wilson, 2008; Ibrahim & Najjar, 2008). Specifically, research has shown that self-congruity increases the likelihood that the utilitarian (functional) attributes of products will be evaluated positively (Azevedo & Farhangmehr, 2005; Johar & Sirgy, 1991). Sirgy, Johar, Samli, and Claiborne (1999) also reported that when perceptions of self-image and the product image match, utilitarian aspects of the vendor (e.g., product quality, variety, cost, customer service, general vibe) are perceived positively. In other words, with congruence existing between self-image and product image, positive bias may occur when evaluating product utility and the product may be seen as worthy of purchase regardless of its true functional performance.

Given the sheer number of retail websites and consumers' ability to skim through alternative sites, it is reasonable to assume that consumers do not go through as deliberate and thoughtful processes of forming congruity judgment as they might do when they walk in a physical retail store the first time. Instead, immediately upon visiting the site consumers make a holistic judgment about whether or not the site is "about me." Indeed, Lindgaard, Fernandes, Dudek, and Brown (2006) reported in their study using an eye-tracking device that web retailers have as little as 50 milliseconds to capture the interest of potential customers. Weinreich, Obendorf, Herder, and Mayer (2006) also found that, even for websites identified with a focused search by consumers, they generally decided whether or not a page was relevant to them in 2 to 3 seconds; furthermore, it is this first impression that appears to affect the subsequent judgments of website elements. There exist, in fact, indications in psychology that people search for evidence to confirm their first impressions and ignore evidence contradicting their initial judgments. This is so called confirmation bias (Plous, 1993) driven by the motivation that people are inclined to validate, as opposed to reject, their initial hypotheses about a phenomenon. We thus argue that only the websites that pass this quick and automatic judgment will receive enough attention from consumers, which then will allow them to undertake specific evaluations of the ways websites present the products they are looking for. It is the initial congruity judgment used as a reference point when evaluating how well the site is designed. Thus, we formulated the following hypothesis.

H1: The initial self-congruity judgment between the self and the site image has a significant influence on the evaluation of the interface designs of an online retail site.

Flow: Holistic Sensation

An essential component of meaningful online experiences is the level of integration between a user and an online space. Well-designed websites may allow for a heightened user experience, lending itself to an "optimal state of focused attention" (Ilsever, Cyr, & Parent, 2007) that allows for an induced flow state. According to Csikszentmihalyi (1990), flow is the holistic sensation that individuals may experience when they are deeply involved in a task. As a result, users report immersion that causes merging of action and awareness, reduction in self-consciousness, and even a loss of sense of time and place (Ilsever et al., 2007). During web navigation, the flow state can be achieved when the user has proficient skills, high arousal, and focused attention. Such an experience likely impacts the user's positive affect and exploratory behavior. This suggests that online retailers should aim to design websites that create this immersed experience for their patrons (Hoffman & Novak, 1996; Novak, Hoffman, & Yung, 2000).

The Mediating Effect of Flow from Website Designs to Purchase Intention

The importance of website design in consumers' patronage behavior has been supported in the literature. For example, Fang and Salvendy (2003) interviewed e-commerce patrons and compiled a set of customer-centered design rules. Attributes of ideal vendor websites included clean homepage layout, aesthetically pleasing graphics, easy search and navigation, logical categorization of products, important and useful links easily accessible on the main page, detailed product descriptions accompanied by pictures for easy comparison, available customer service options, and quick and non-invasive checkout procedures. In addition, many interviewees specified that large, flashy animations were distracting and unnecessary. Jeong, Fiore, Niehm, and Lorenz (2009), however, found that rich sensory design elements enhanced entertainment and aesthetic experiences that increased pleasure and arousal for users, which in turn increased their intention to purchase. The authors suggested that this proposed "experiential sweet spot" may be reached by the addition of special graphic features such as zoom mode and three dimensional model views of products. Importantly, these design elements must be flawlessly executed to avoid perturbing site loading and thus degrading perceived quality.

Although the aforementioned findings support the direct effect of website design on consumers' patronage behavior, several researchers called for the study examining the mediating role of flow in this relationship. For instance, Hoffman and Novak (1996) argue that, while flow depends on consumers' ability to use the Internet and control the information online, the flow state with online retailing can be induced when the retailing site is designed in a way to create a high level of arousal, a focused attention to the site, and positive interactivity. Ilsever et al. (2007) also suggest that specific elements of site design can enhance the flow state. These elements include speed of page loading, quality and predictability of feedback between user input and site response, ease of navigation, simplicity, fun, utility, and the match between the virtual environment's complexity and the user's competence. Hausman and Siekpe (2009) also found that the perceived usefulness, informativeness, and entertaining ability of the site increase consumer flow.

While many of the flow-inducing factors were discussed in relation to the site's technical responsiveness and the navigation design of information flow, we propose that the visual and transactional designs of websites will also affect the consumers' ability to reach the flow state. In fact, Csikszentmihalyi (1990) argued that flow occurs at the boundary between boredom and anxiety. Too much challenge causes anxiety while too little challenge causes boredom. In this perception, not only is interaction design critical, but the way a website is visually designed can have a significant influence. The website should be designed in a way to balance it through the effective use of layout, typography, and aesthetically pleasing visual cues. Transaction design that eases privacy and information security concerns is also important as security weaknesses could heighten the sense of consumer anxiety.

When users are deeply involved in online interactions, their cognitive processes are impacted by the virtual environment, which allows them to become mentally removed from their physical environment. This experience creates a sense of time distortion and enhances the flow state, which tempts users to spend more time on a web page. When flow states are achieved, users are free to explore and play leisurely (Mathwick & Rigdon, 2004). This flow experience is intrinsically rewarding, and thus is continuously sought after. For this reason, when a web vendor designs its website to create a sense of flow for customers, it will increase the likelihood of initial and repeated website patronage. We thus formulate the following hypotheses.

H2: The positive evaluation of interface designs of an online store will significantly enhance the flow experience with the store.

H3: The enhanced flow experience will significantly increase the purchase intention from an online store.

Methods

Research Design and Sample

The proposed hypotheses were tested in the context of four different apparel websites. To select the websites used as stimuli for this study, we first identified sixteen online websites that sell female dresses in the price range of $60-$100 a piece. To avoid any contamination from prior judgment and experience with the site, we chose retail sites that were relatively unknown. We then conducted two focus group interviews to determine the final set of four websites for the study. Each focus group consisted of eight female participants whose ages ranged from 20 to 40. We first asked the respondents to evaluate their first impression of 16 websites upon briefly visiting each site. We then asked how they formed this first impression. The responses indicated that the first impression was determined mostly by overall ambience and visual layouts of the webstore gate (80% of the respondents), followed by the overall color scheme (40%), spokespersons (30%), and specific types of products featured on the site gate (30%). However, the participants suggested that this was a rather unconscious and automatic judgment based on their holistic and emotional reactions to the site. The focus group participants were then asked to choose 6 out of 16 offered websites that varied in the overall feel. The results were aggregated and we selected four websites most frequently chosen by the respondents, which in turn were used as stimuli for the main survey.

The data for the main analysis were collected using a web survey via a marketing research firm that pre-recruited and maintained consumer panels in the United States. After sending out survey invitations to the company's female panel, 700 responses were obtained within a three-day period. Each of the identified four websites was randomly distributed to a participant and each participant reviewed one assigned website. Respondents were first asked to form a quick and automatic judgment about the website personality, and then asked to explore the site for at least 5 minutes before being asked to evaluate specific design elements of the site. The data excluded those (n = 27) who had previously shopped through one of these sites to avoid variation influenced by past experience. The final sample consisted of 673 respondents. A demographic profile of the respondents indicated that their median age was 28 years; 72.1% Caucasian, 11.5% African-American, 7.3% Hispanic-American, and 5.9% Asian-American; they represented all income categories with $50,000-$69,999 as the m edian income.

Measures

The measures consisted of personality, visual design, information design, navigation design, transaction design, flow, and purchase intention. Each item was rated on a 7-point Likert-type scale (Table 1). The six personality items (i.e., logical, reliable, lively, chic, friendly, and honest), used for both online store and self, were adapted from Poddar, Donthu, and Wei's (2009) website personality scale. The items were selected by the face validity test conducted by a group of experts including faculty and seven Ph.D. students majoring in Retail, Hospitality and Tourism Management in a major university in the southeastern United States. Congruity scores were calculated by the gap score formula as following:

$$\text{Self-congruity} = \sum |\text{Online store personality} - \text{Self personality}|.$$

The 16 scale items for four web design factors were adapted from Bart, Shankar, Sultan, and Urban (2005). The two factors,

information and navigation, were highly correlated (r = .89) and thus were combined into one factor, labeled "information/navigation." The scale items for flow were adapted from Wang, Baker, Wagner, and Wakefield (2007) who identified four dimensions: interest, curiosity, control, and attention. The scale items for behavioral intention were adapted from Holzwarth, Janiszewski, and Neumann (2006).

Data Analysis and Results

Structural equation modeling (SEM) with LISREL (Jöreskog & Sorbom, 2006) was employed to analyze the data and parameters were estimated using Robust Maximum Likelihood method. Using a two-stage analysis (Anderson & Gerbing, 1988), the measurement models were validated using confirmatory factor analyses (CFA) and proposed hypotheses were tested with a the structural model. In terms of the model fit, we used comparative fit index (CFI), non-normed fit index (NNFI), and root mean square error of approximation (RMSEA) (Hair, Black, Babin, & Anderson, 2009).

Measurement Model

Before establishing the measurement model with confirmatory factor analysis (CFA), exploratory factor analysis (EFA) was performed to discover the factor structure of the observed variables of web design evaluations. Since the measure by Bart et al. (2005) composed of a long list of items assessing multiple constructs, EFA was necessary as a precursor analysis to CFA to identify factors of web design evaluations most relevant to our context. The results of EFA produced three factors: visual, information/navigation, and transaction. All factors had eigenvalues greater than 1.0 and loading greater than 0.40. One item ("The illustrations for the products and services at this site are helpful in making a purchase decision") was cross-loaded between visual and information/navigation and thus was deleted in the further analyses.

Following the suggestion of Wang et al. (2007), the flow was constructed as a second-order factor reflective of the subscale constructs of interest, curiosity, control, and attention.

Table 1. Confirmatory factor analysis result.

Item	C[a]	V[b]	N[c]	T[d]	F[e]	I[f]
Logical	0.923					
Reliable	0.760					
Lively	0.940					
Chic	0.885					
Friendly	0.897					
Honest	0.902					
This site is visually appealing.		0.859				
The visual appearance and manner of this site is professional.		0.856				
This site displays a high level of artistic sophistication/creativity.		0.860				
Overall layout of this site is aesthetically pleasing.		0.928				
This site content is easy for me to understand.			0.782			
This site provides relevant information.			0.759			
Information on this site is well organized.			0.873			
This site is easy to navigate.			0.842			
The process for browsing is clear.			0.834			
The navigation flow of this website is user friendly.			0.884			
It is easy to find the information that I was looking for.			0.865			
Information regarding security of payments is clearly presented.				0.759		
Easy ordering and payment mechanisms exist.				0.787		
This site appears to offer secure payment methods.				0.856		
Return policies or other measures of accountability are clear.				0.749		
flow_interest					0.686	
flow_curiosity					0.744	
flow_control					0.517	
I can imagine buying clothes from this company.						0.737
The next time I buy clothes, I will take this company into consideration and have them make me an offer.						0.931
I am very interested in buying clothes from this company.						0.872
Composite Reliability	**0.956**	**0.930**	**0.942**	**0.868**	**0.689**	**0.886**

Note: [a]Congruity; [b]Visual; [c]Navigation; [d]Transaction; [e]Flow; [f]Intention.

Table 2. Construct validity (average variances extracted)**.**

	1	2	3	4	5	6
1. Congruity	**0.786**					
2. Visual	0.697	**0.768**				
3. Information / Navigation	0.458	0.596	**0.698**			
4. Transaction	0.251	0.296	0.449	**0.622**		
5. Flow	0.393	0.338	0.346	0.232	**0.436**	
6. Behavioral Intention	0.748	0.594	0.426	0.227	0.294	**0.723**

Note: Diagonal entries show the average variance extracted by the construct.

However, due to the low internal reliability (< .60), attention dimension was deleted (Bagozzi & Yi, 1988). Its measurement result for the second-order factor model with the three first-order dimensions was acceptable: χ^2 (50) = 271.36, p < .001; CFI = .990; NNFI = .986; RMSEA = .081. Then mean scores for these three dimensions entered as separate observed variables of the flow latent variable.

The final measurement model was tested with CFA containing six constructs (i.e., personality, visual, information/navigation, transaction, flow, and behavioural intention) with 27 observed variables as shown in Table 1. The measurement models showed supportive results for the six dimensions: χ^2 (309) = 1,268.36, p < .001; CFI = .985; NNFI = .982; and RMSEA = .068. In addition, all the measures showed the initial consistency with all factors' composite reliabilities greater than 0.80 except for flow (0.69) and factor loadings greater than 0.50.

The construct validities of the latent constructs were evaluated by both convergent and discriminant validity. Convergent validities were evidenced by the average variance extracted (AVE) values for all constructs greater than the threshold value of .50 (Fornell & Larcker, 1981), except for flow (.436) (Table 2). Considering the flow variable's factor loadings ranging from .517 to .744 and composite reliability of .689, its AVE value did not seem critical in determining its convergent validity. Discriminant validity was confirmed by the average variances extracted (AVE) larger than the shared variances (i.e., squared correlation coefficients) between all possible pairs of constructs (Fornell & Larcker, 1981) (Table 2). Thus, the construct validities of all latent constructs were satisfactory.

Structural Model and Hypotheses Testing

The structural models were constructed to examine the hypothesized relationships among constructs (Figure 1). The model showed good fits to the data: χ^2 (317) = 1,776.29, p < .001; CFI = .976; NNFI = .974; RMSEA = .083. Congruity had a positive effect on evaluation of visual (γ = 0.869, t = 27.301, p < .001), information/navigation (γ = 0.706, t = 17.856, p < .001), and transaction (γ = 0.527, t = 12.884, p < .001). Flow was positively influenced by three web design factors: visual (γ = 0.733, t = 9.981, p < .001), information/navigation (γ = 0.207, t = 4.446, p < .001), and transaction (γ = 0.096, t = 2.673, p < .01). Subsequently, flow clearly showed a positive effect on purchase intention (γ = 0.844, t = 9.391, p < .001). Thus, all hypotheses were supported.

Discussion and Implications

The success of online retailing, particularly for initial customer recruitment for new and small-scale online businesses without high brand recognitions, often depends on the retailer's ability to entice consumers to spend time exploring its site after visiting it. While previous literature focused on design elements that influence consumer patronage behavior, consumers' emotional responses are also important, for they are shown to affect consumers' evaluations of product and service designs (Lee, 2011; Noble & Kumar, 2008). Designers and design managers can gain by understanding the interplay between emotional reactions and cognitive evaluations in an effort to increase the chances for an online business to succeed. The current study examines this aspect by incorporating the concepts of initial self-congruity and flow. The results of the study yield the following implications.

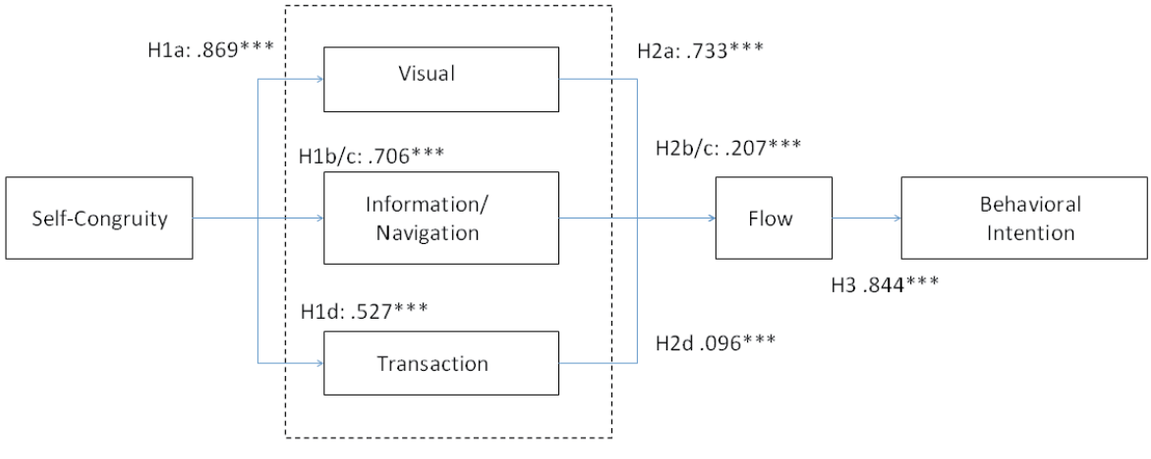

Figure 1. Research Model (significant:**p< .01,***p< .001**).**

First, while previous literature focused on self-congruity formed based on a deliberate evaluation of store attributes, we investigate the effect of initial self-congruity. We argue that consumers are likely to form a quick and holistic judgment of self-congruity immediately upon visiting the site; it is this positive judgment that warrants further interest and exploration of the site. The results of our study lend strong support to this argument. Specifically, we found that those who perceive the website to be congruent with their personality evaluate the site to be more aesthetically pleasing and professional, and the content of the information more relevant and easier to navigate. They even evaluated the website's transaction and security design more favorably. To ensure the validity of these effects, we also checked the alternative model where the consumer evaluations of visual, information/navigation, and transaction design influence the congruity judgment between the self and the site. The alternative model showed a poorer fit than the proposed model (χ^2 (316) = 1,403.06, $p < .001$; CFI = .982; NNFI = .980; and RMSEA = .072). Specifically, comparing this alternative model with the proposed model, the alternative model lost 1 degree of freedom and chi-square value of 373.23, which indicates a significant deterioration. We thus confirm that a high congruity judgment leads consumers to make a more favorable evaluation of website designs, supporting a significant interplay between initial holistic reactions and subsequent cognitive evaluations.

Past studies have indicated that a consumer's evaluation of interface designs has a significant influence on behavioral intention toward an online store (Cyr, 2008; Harris & Goode, 2004; Park & Kim, 2003; Zeithaml, Parasuraman, & Malhotra, 2002). We propose flow as a critical affective reaction mediating this relationship. That is, well-designed web interfaces will create an optimal state of focused attention to the site and lead consumers to be immersed in the site to the extent that they lose the sense of time and place. It is this state of holistic and affective sensation that increases consumers' willingness to purchase from the site. In terms of web design elements generating the state of flow, the results indicate that the visual design is most critical, followed by information/navigation design. We note that the previous literature on flow has attributed flow-inducing factors mostly to navigation and information design. Our results are the first to shed light on the importance of strong visual aesthetics in inducing the flow state. In addition, our results highlight the importance of transaction/security design on the state of flow. That is, enabling consumers to explore and enjoy the site without security and transactional hassles also seems to be a significant factor inducing the flow state. The results of the study also confirm a strong positive influence of flow on the purchasing intention. To verify the mediating effect of flow, we tested an alternative model where each web design evaluation directly influences behavior. While this alternative model showed a reasonably good fit (χ^2 (246) = 1,501.96, $p < .001$; CFI = .978; NNFI = .975; and RMSEA = .087), the fit significantly deteriorated compared to the proposed model. Specifically, the alternative model lost 71 degrees of freedom and the chi-square value by 274.33, clearly indicating the significant mediating role of flow between design evaluations and the purchasing intention.

Finally, we note that the current study is conducted in the context of online clothing stores. Apparel is a product category where a consumer's purchasing decision is significantly based on hedonic evaluation and emotional responses to product and service offerings. Our findings should be interpreted with this context in mind. Replicating the framework proposed by this study with different product categories, particularly with regard to more standardized product categories such as books and electronics, could be an interesting extension of this study. Specifically, validating or identifying the differences in ways in which the proposed framework operates between hedonic versus utilitarian focused product categories can offer practical guidance to related online retailers.

Another important avenue to pursue is to examine the specific design elements of an online store that determine the initial self-congruency judgment. Our study provides some information in this regard. Our focus group interviews indicated that the initial self-congruity judgment is likely to be based on the visual ambiance and the overall visual layout of the Internet storefront. This judgment also appears to be affected by the overall color scheme, spokespersons and image of models used, and specific types of products showcased on the site. We note, however, that the initial self-congruity is rather unconscious and automatic based on holistic and emotional reactions to the site. Lindgaard et al. (2006) indeed argued that the speed at which users form a judgment of a website precludes cognitive processes and the judgment is an affective gut reaction to what people see on the screen. While some insight can be obtained from our focus group findings, the initial self-congruity judgment is a rather unconscious process which may be difficult to identify through interviews or surveys. Studies based on the imagining of a subject's brain activity may shed further light on this matter.

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References

1. Aaker, J. L. (1999). The malleable self: The role of self-expression in persuasion. *Journal of Marketing Research, 36*(1), 45-57.
2. Anderson, J. S., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychology Bulletin, 103*(3), 411-423.
3. Azebedo, A., & Farhangmehr, M. (2005). Clothing branding strategies: Influence of brand personality on advertising response. *Journal of Textile and Apparel, Technology and management, 4*(3), 1-13.

4. Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74-94.
5. Bart, Y., Shankar, V., Sultan, F., & Urban, G. L. (2005). Are the drivers and role of online trust the same for all web sites and consumers? A large-scale exploratory empirical study. *Journal of Marketing, 69*(4), 133-152.
6. Bauer, H. H., Falk, T., & Hammerschmidt, M. (2006). eTransQual: A transaction process-based approach for capturing service quality in online shopping. *Journal of Business Research, 59*(7), 866-875.
7. Bhattacherjee, A. (2002) Individual trust in online firms: Scale development and initial test. *Journal of Management Information Systems, 19*(1), 211-241.
8. Chebat, J. C., Sirgy, M. J., & St-James, V. (2006). Upscale image transfer from malls to stores: A self-image congruence explanation. *Journal of Business Research, 59*(12), 1288-1296.
9. 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.
10. Cowart, K. O., Fox, G. L., & Wilson, A. E. (2008). A structural look at consumer innovativeness and self-congruence in new product purchases. *Psychology & Marketing, 25*(12), 1111-1130.
11. Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper Collins.
12. Cyr, D. (2008). Modeling web site design across cultures: Relationships to trust, satisfaction, and e-loyalty. *Journal of Management Information System, 24*(4), 47-72.
13. Ericksen, M. K., & Sirgy, M. J. (1992). Employed females' clothing preferences, self-image congruence, and career anchorage. *Journal of Applied Social Psychology, 22*(5), 408-422.
14. Fang, X., & Salvendy, G. (2003). Customer-centered rules for design of e-commerce web sites. *Communications of the AMC, 46*(12), 332-336.
15. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50.
16. Grubb, E. L., & Grathwohl, H. L. (1967). Consumer self-concept, symbolism, and market behavior: A theoretical approach. *Journal of Marketing, 31*(4), 22-27.
17. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis* (7th ed.). New York, NY: Pearson Prentice Hall.
18. Harris, L. C., & Goode, M. M. H. (2004). The four levels of loyalty and the pivotal role of trust: A study of online service dynamics. *Journal of Retailing, 80*(2), 139-158.
19. Hausman, A. V., & Siekpe, J. S. (2009). The effect of web interface features on consumer online purchase intentions. *Journal of Business Research, 62*(1), 5-13.
20. Hoffman, D. L., & Novak, T. P. (1996). Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing, 60*(3), 50-68.
21. Holzwarth, M., Janiszewski, C., & Neumann, M. (2006). The influence of Avatars on online consumer shopping behavior. *Journal of Marketing, 70*(4), 19-36.
22. Ibrahim, H., & Najjar, F. (2008). Assessing the effects of self-congruity, attitudes and customer satisfaction on customer behavioral intenions in retail environment. *Marketing Intelligence & Planning, 26*(2), 207-227.
23. Ilsever, J., Cyr, D., & Parent, M. (2007). Extending models of flow and e-loyalty. *Journal of Information Science and Technology, 4*(2), 3-22.
24. Jensen, J. (2010, September 29). *Online product research*. Retrieved December 10, 2011, from http://pewinternet.org/Reports/2010/Online-Product-Research.aspx
25. Jeong, S. W., Fiore, A. M., Niehm, L. S., & Lorenz, F. O. (2009). The role of experiential value in online shopping: The impacts of product presentation on sonsumer responses towards an apparel web site. *Internet Research, 19*(1), 105-124.
26. Johar J. S., & Sirgy, M. J. (1991). Value-expressive versus utilitarian advertising appeals: When and why to use which appeal. *Journal of Advertising, 20*(3), 23-33.
27. Jöreskog, K. G., & Sorbom, D. (2006) *LISREL 8.8 for Windows* [Computer software]. Lincolnwood, IL: Scientific Software International.
28. Kang, Y. S., Hong, S., & Lee, H. (2009). Exploring continued online service usage behavior: The roles of self-image congruity and regret. *Computers in Human Behavior, 25*(1), 111-122.
29. Kim, M., & Lennon, S. (2008). The effects of visual and verbal information on attitudes and purchase intentions in internet shopping. *Psychology & Marketing, 25*(2), 146-178.
30. Kressmann, F., Sirgy, M. J., Herrmann, A., Huber, F., Huber, S., & Lee, D. J. (2006). Direct and indirect effects of self-image congruence on brand loyalty. *Journal of Business Research, 59*(9), 955-964.
31. Lavie, T., & Tractinsky, N. (2004). Assessing dimensions of perceived visual aesthetics of web sites. *International Journal of Human-Computer Studies, 60*(3), 269-298.
32. Lee, S. (2011). Evaluating serviceability of healthcare servicescapes: Service design perspective. *International Journal of Design, 5*(2), 61-71.
33. Lindgaard, G., Fernandes, G., Dudek, C. & Brown, J. (2006). Attention web designers: You have 50 milliseconds to make a good first impression! *Behaviour and Information Technology, 25*(2), 115-126.
34. Liu, C., & Arnett, K. P. (2000). Exploring the factors associated with web site success in the context of electronic commerce. *Information & Management, 38*(1), 23-33.
35. Mathwick, C., & Rigdon, E. (2004). Play, flow, and the online search experience. *Journal of Consumer Research, 31*(2), 324-332.

36. Mittal, B. (1994). A study of the concept of affective choice mode for consumer decisions. In C. T. Allen & D. R. John (Eds.), *Advances in consumer research* (Vol. 21, pp. 256-263) Provo, UT: Association for Consumer Research.
37. Morganosky, M. A. (1990). Store and brand type influences on the perception of apparel quality: A congruity theory approach. *Clothing and Textiles Research Journal, 9*(1), 45-49.
38. Mugge, R., Govers, P. C. M., & Schoormans, J. P. L. (2009). The development and testing of a product personality scale. *Design Studies*, *30*(3), 287-302.
39. Noble, C. H., & Kumar, N. (2008). Using product design strategically to create deeper consumer connection. *Business Horizons*, *51*(5), 441-450.
40. Novak, T. P., Hoffman, D. L., & Yung, Y. F. (2000). Measuring customer experience in online environments: A structured modeling approach. *Marketing Science, 19*(1), 22-42.
41. Park, C. H., & Kim, Y. G. (2003). Identifying key factors affecting consumer purchase behavior in an online shopping context. *International Journal of Retail & Distribution, 31*(1), 16-29.
42. Plous, S. (1993). *The psychology of judgment and decision making*. New York, NY: McGraw-Hill
43. Poddar, A., Donthu, N., & Wei, Y. (2009). Web site customer orientations, web site quality, and purchase intentions: The role of web site personality. *Journal of Business Research, 62*(4), 441-450.
44. Quester, P. G., Karunaratna, A., & Goh, L. K. (2000). Self-congruity and product evaluation: A cross-cultural study. *The Journal of Consumer Marketing, 17*(6), 525-537.
45. Ranganathan, C., & Ganapathy, S. (2002). Key dimensions of business-to-consumer websites. *Information & Management, 39*(6), 457-465.
46. Sirgy, M. J. (1982). Self-concept in consumer behavior: A critical review. *Journal of Consumer Research, 9*(3), 287-300.
47. Sirgy, M. J., Grewal, D., & Mangleburg, T. (2000). Retail environment, self-congruity, and retail patronage: An integrative moel and a research agenda. *Journal of Business Research, 49*(2), 127-138.
48. Sirgy, M. J., Johar, J. S., Samli, A. C., & Claiborne, C. B. (1991). Self-congruity versus functional congruity: Predictors of consumer behavior. *Journal of the Academy of Marketing Science, 19*(4), 363-375.
49. Sirgy, M. J., Lee, D. -J., Johar, J. S., & Tidwell, J. (2008). Effect of self-congruity with sponsorship on brand loyalty. *Journal of Business Research, 61*(10), 1091-1097.
50. Sirgy, M. J., & Samli, A. C. (1985). A path analytic model of store loyalty involving self-concept, store image, geographic loyalty, and socioeconomic status. *Journal of the Academy of Marketing Science, 13*(3), 265-291.
51. Schonfeld, E. (2010, March 8). Forrester forecast: Online retail sales will grow to $250 billion by 2014. Retrieved May 13, 2011 from http://techcrunch.com/2010/03/08/forrester-forecast-online-retail-sales-will-grow-to-250-billion-by-2014/
52. U.S. Census Bureau. (2010). *E-stats*. Retrieved December 10, 2011, from http://www.census.gov/econ/estats/2008/2008reportfinal.pdf
53. Wakefield, R. J., Stocks, M. H., & Wilder, W. M. (2004). The role of website characteristics in initial trust formation. *Journal of Computer Information Systems*, *45*(1), 94-103,
54. Wang, L., Baker, J., Wagner, J., & Wakefield, K. (2007). Can a retail web site be social? *Journal of Marketing, 71*(3), 143-157.
55. Weinreich, H., Obendorf, H., Herder, E., & Mayer, M. (2006). Off the beaten tracks: Exploring three aspects of web navigation. In L. Carr, D. De Roure, A. Iyengar, C. A. Goble, & M. Dahlin (Eds.), *Proceedings of the 15th International Conference on World Wide Web* (pp. 133-142). New York, NY: ACM Press.
56. Zeithaml, V., Parasuraman, A., & Malhotra, A. (2002). Service quality delivery through web sites: A critical review of extant knowledge. *Journal of the Academy of Marketing Science, 30*(4), 362-375.
57. Zinkhan, G. M., & Hong, J. W. (1991). Self concept and advertising effectiveness: A conceptual model of congruency conspicuousness and response mode. In R. H. Holman & M. R. Solomon (Eds.), *Advanced in consumer research* (Vol. 18, pp. 348-354). Provo, UT: Association for Consumer Research.