

Psychographic Variables Affecting Willingness to Use Body-Scanning

Ann Marie Fiore, Iowa State University
Seung-Eun Lee, University of Minnesota
Grace Kunz, Iowa State University

Mass customization, a hybrid of mass production and customization, includes the mass production of individually customized goods. Body-scanning can be both a service and experience involving the use of light-based or laser-based electronic scanning of the customer's body form to develop a pattern for a mass customized apparel product offering an individualized fit. A model comprised of relationships between psychological traits, service-based and experience-based motivations for using body-scanning, and willingness to use body-scanning was proposed and statistically supported using 521 university subjects and the analysis of moment structures (AMOS) statistic. As hypothesized, Optimum Stimulation Level (OSL) predicted Experimenting with Appearance (EA) and Enhancement of Individuality (EI). As proposed, OSL and EA predicted the motivation, trying body-scanning as an exciting experience. As posited, both EA and EI predicted using body-scanning for a better fitting product. Both motivations were mediating variables between the psychological traits and willingness to use body-scanning, but using body-scanning for a better fitting product had a stronger effect. Theoretical and business implications were discussed.

INTRODUCTION

Pine and Gilmore (1999) stressed that goods, services, and experiences are distinct economic offerings. They proposed that goods are tangible, services are intangible, and experiences are memorable. Goods are made, services are delivered, and experiences are staged. Gilmore and Pine (1997) further differentiated services and experiences. Services are intangible activities supporting information gathering and consumer decision-making essential to the development/selection of a satisfactory product (i.e., goods). Experiences are stimulating events created when providing a service that contribute intrinsic pleasure (i.e., pleasure for its own sake; Hirschman & Holbrook, 1982) rather than utilitarian benefits. According to Pine and Gilmore (1999), present day consumers increasingly derive value from services and experiences, but consumer demand for services is peaking while demand for experiences continues to grow. Therefore, a company should use goods as props and services as the stage to engage customers in a memorable event, or experience. Incorporating value derived by the customer from the combination of goods, service, and/or experience is essential to effective business development.

Mass customization, an outgrowth of the service economy according to Pine and Gilmore (1999), provides a company with an opportunity to offer the customer value from the

differentiated product, service, and experience. Mass customization is a hybrid of mass production and customization and is defined as "the mass production of individually customized goods and services" (Pine, 1993, p. 48). In order to be classified as mass customization, the customer must be involved in the design process and manufacturing of the product and it must exhibit modularity (Duray, Ward, Milligan, & Berry, 2000). Mass customization "automatically turns a good into a service... The intangible service is helping the customer figure out what they want" (Gilmore & Pine, 1997, p.12). The service of mass customization entails information gathering and decision-making with the aim of creating a tangible product that meets the customer's exact specifications at a reasonable price (Pine, 1998). However, the value of mass customization for customers may also be derived from experience aspects of the process. The mass customization encounter can become an avenue for a memorable, engaging experience.

While the experience economy blooms, industrialized countries of the United Kingdom (Wilson, 1999), France (Hetzl, 1998), and the United States (Taplin, 1999), face modest growth and even decline in consumer demand for apparel products. This stagnation in demand for apparel is partly attributed to lack of product differentiation, uniqueness and novelty perpetuated by adherence to product-driven manufacturing, retail, and marketing systems (Duray & Milligan, 1999; Pine, 1993; Taplin, 1999; Wilson, 1999). A product-driven system, optimized by high volume and long production runs of standardized products (Pine, 1993) sold in "no-frills" apparel retail outlets to the mass market, is out of step with a large segment of today's customers.

Mass customization may address the needs of these more demanding customers of apparel. Mass customization may increase value for the customer through services supporting development of differentiated and unique apparel products meeting with customer satisfaction. Industry literature (e.g., Knight, 1999; Martin, 1997; Pine, 1996; Scheller, 1998; Rabon, 1996) describing mass customization services launched by apparel companies tends to emphasize the product or service benefits for the customer. However, the importance of the customer's shopping experience associated with mass customized textile and apparel products has recently been broached in scholarly literature. Huffman and Kahn (1998) examined the experience involved in mass customizing an upholstered sofa. Whereas these researchers selected customizing upholstered sofas partly because of their experiential and aesthetic nature, the independent variables studied did not capture the hedonic nature of the experience. Instead, the researchers explored the information-processing nature of the experience. They found that information presentation and level of input needed from the customer when mass customizing the upholstered sofa influenced satisfaction with the process and indirectly influenced satisfaction with their product choice. Biedron and Anderson-Connell's (1999) study offers a beginning link between the hedonic experience and mass customization of apparel. They found enjoyment from shopping to be one of the variables correlated with interest in using mass customization services for apparel. In the same vein, we propose that the hedonic (exciting) experience during mass customization of fashion products will entice the customer.

Mass customization of apparel includes efforts to produce a customized, better fitting product. To achieve the mass customized fit, the customer is deeply engaged in the pre-purchase service encounter where information is gathered regarding specifications of the desired

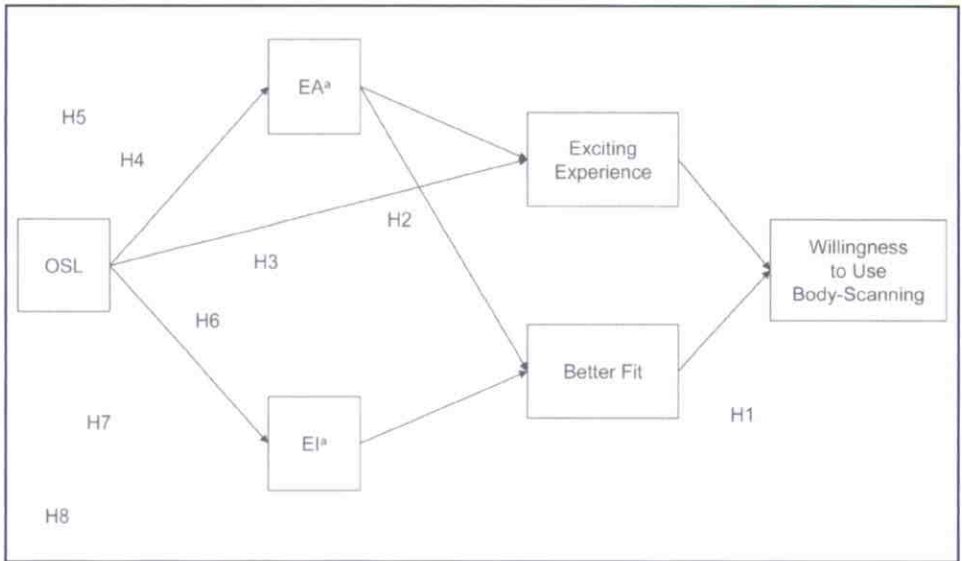
product. For example, Lands' End customers enter data online regarding body shape, body measurements, and preferred level of looseness (Tedeschi, 2002). Other companies, such as Levi Strauss have assistants take the customer's body measurements for the customized product (Malone, 1999). A more technologically advanced method of gathering data for a mass customized fit is using body-scanning which involves gathering measurement data of the customer's body form using light-based or laser-based electronic scanning equipment (Istook & Hwang, 2001) to alter a pattern used to manufacture a product with an individualized fit. The interface with technology and staff during measurement gathering becomes an area for businesses to build memorable customer experiences into the service. Businesses could capitalize on the body-scanning process in particular because it can offer an exciting experience to the customer.

Body-scanning has not been a panacea for apparel businesses. Failures of body-scanning based mass customization efforts such as Levi's Original Spin program (Malone, 1999) and Custom Foot's customized footwear program (Malone, 1998) suggest that further study regarding factors affecting the program success is essential. Many questions remain, not only in terms of the most accurate body-scanning equipment and methods (Istook & Hwang, 2001; Stylios, Han, & Wan, 2001; Yu, Ng, & Yan, 2001) and customer expectations about the fit of the final product (Malone, 1998), but also in customer expectations of the body-scanning experience. The benefits of body-scanning may lie not only in delivering a better fitting product, but also in an engaging customer experience. To help ensure successful mass customized apparel programs, the contribution of the customer experience should be reconciled.

Psychographic variables, particularly psychological traits and motivations for using mass customization, may delineate characteristics of the market segment for mass customized fashion products. Customers may be motivated by the value offered by the customized fit of the fashion product and the added value provided by the stimulating body-scanning experience. Specifically, those who desire a high level of stimulation from the environment, defined as high on the psychological trait of Optimum Stimulation Level (Zuckerman, 1971; Raju, 1980), may derive more value from the engaging experience than the better-fitting product of mass customization (Fiore, Lee, Kunz, & Campbell, 2001). Many products and services have been mass customized, from automobiles and insurance to fashion products. Level of Clothing Interest (Creekmore, 1971) may further delineate consumers who are willing to use body-scanning and motivations for its use pertaining to fashion products.

Understanding the foregoing consumer characteristics of a market segment, including what motivates these consumers, could aid in the development of more effective body-scanning programs. Thus, the objective of the present study is to test a model linking psychological traits as predictors of motivations and motivations as predictors of willingness to use body-scanning for fashion products (Figure 1). The present model explores the linkages between psychological traits of Optimum Stimulation Level (OSL) and two factors of Clothing Interest, Experimenting with Appearance (EA) and Enhancement of Individuality (EI), to better delineate the customer willing to engage in mass customization of fashion products. To better understand motivations of the customer, we examine whether these psychological traits (OSL, EA, and EI) predict two motivations for using body-scanning for fashion products. The first motivation is service-oriented, that of creating a better fitting product. The second

motivation is experience-oriented, that of having an exciting experience. We also examine whether these two motivations predict willingness to use body-scanning for fashion products.



a Experimenting with Appearance (EA) and Enhancement of Individuality (EI) are Clothing Interest factors

Figure 1. Conceptual model of psychological traits, motivations, and willingness to use body-scanning.

HYPOTHESES

Apparel firms, both large (e.g., Brooks Brothers, Lands’ End, Levi Strauss, Nike) and small (e.g., Blackrock.com based in the U.K., Second Skin Swimwear, IC3D), are turning to serving the customer through mass customization. These apparel firms have adopted one or both mass customization service options, that of creating a unique aesthetic design and/or creating a better fitting product for the customer. To achieve a better fitting product, measurements may be taken manually or through body-scanning. Body-scanning involves using light or lasers to generate electronic measurements of the customer’s body form to alter or create a pattern used in production to manufacture a product with an individualized fit. Over 100 clothing manufacturers are working in conjunction with [TC]² (Textile/Clothing Technology Corporation, online: www.tc2.com) to develop a cost effective and accurate body-scanning system for use with customers (Eisenberg, 1998), likely leading to a proliferation of body-scanning beyond current use by a few manufacturers such as Hart, Schaffner, & Marx.

A body-scanning service offers value by providing a better fitting product. A body-scanning service for fashion products may also be an excellent vehicle for building an experience for the customer. In body-scanning, technology assisted data collection and presentation of one’s digital body form, may foster an engaging experience due to novelty and interface with the advanced technology of large digital scanners. The process has been described as

“almost like a carnival ride. The equipment is draped in black theatrical cloth to keep out the light. You go in, get down to your underwear, put your feet on the white marks and press the button. Lights flash and music plays...” (Eisenberg, 1998, p. G6). Past research supports the influence of both the resulting product from the service and the engaging experience on willingness to use mass customization (Fiore et al., 2001; Kamali & Loker, 2002). The present study will further examine the role of the resulting product from the service and the engaging experience in acceptance of mass customization by testing whether creating a better-fitting product and having an exciting experience are motivations that increase willingness to use body-scanning. Based on the discussion of potential benefits of body-scanning, the description of a customer’s interface with body-scanning technology, and previous mass customization research findings we believe both trying body-scanning to create a better fitting product and an exciting experience will positively affect subjects’ willingness to use body-scanning. We propose:

H1: *The motivation, trying body-scanning to create a better fitting product, will positively predict subjects’ willingness to use body-scanning.*

H2: *The motivation, trying body-scanning to create an exciting experience, will positively predict subjects’ willingness to use body-scanning.*

OSL characterizes an individual’s general response to environmental stimuli. Every organism has a preferred level of stimulation, termed the “optimum stimulation level” (Zuckerman, 1971). An individual seeks this level of stimulation from environment stimuli. According to Kish and Donnenwerth (1969), high OSL individuals find stimulation in situations, activities, and ideas that are novel, changing, complex, surprising, and intense. According to Raju (1980), high OSL individuals have more positive responses towards new situations than low OSL individuals. Positive responses towards stimulating situations suggest that high OSL individuals would be motivated by the new and exciting experience offered by body-scanning. Past research (Fiore et al., 2001) supports a positive relationship between OSL and using mass customization for its exciting experience. The present study, using a larger sample representing different regions of the U.S., focuses on the relationship between OSL and the exciting experience resulting from one type of mass customization, that of body-scanning.

Raju (1980) illustrated that high OSL individuals are characterized as having a higher degree of exploratory tendencies (i.e., exploring the environment) motivated by variety seeking, curiosity, and risk taking. Steenkamp and Baumgartner’s (1992) comprehensive review of OSL literature and empirical study confirmed that OSL was positively associated with consumer behaviors motivated by variety seeking, intrinsic curiosity, and risk taking. OSL was positively correlated with exploratory tendency factors of innovativeness (i.e., eagerness to know about or try new products or services), brand switching for change or novelty, and selecting products that involve perceived risk. Steenkamp and Baumgartner concluded that high OSL individuals are driven by curiosity, or an intrinsic need to seek information for its own sake, rather than utilitarian “purposive” search behavior. Wahlers, Dunn, and Etzel (1986) found that OSL was positively correlated with the exploratory tendency factor, exploration through shopping. Similarly, Hanna and Wagle (1989) conclude that level of consumer effort and stimulation during shopping is positively associated with level of OSL. Body-scanning offers a new service that could feed curiosity and the need for novelty. Body-scanning

technology is still under development (Istook & Hwang, 2001; Stylios, Han, & Wan, 2001); therefore risk is involved in obtaining a satisfactory product. The newness and risk involved in body-scanning may appeal to the high OSL individual looking for an exciting experience. Ample support for the positive relationship between OSL and the exploratory tendencies fed through consumer behaviors, including the use of mass customization, suggests that the body-scanning experience will motivate high OSL individuals. We therefore hypothesize:

H3: *OSL will positively predict trying body-scanning as an exciting experience.*

High OSL individuals have a multitude of ways for satisfying their exploratory tendencies. Apparel (also referred to as clothing and fashion in the present paper), an ever-changing product, and experimenting with one's appearance may be outlets for these exploratory behaviors, particularly for college-aged consumers (Stanforth, 1995). To investigate this premise, associations between psychological traits of OSL and Clothing Interest (Gurel & Gurel, 1979) can be measured. Clothing Interest refers to "attitudes and beliefs about clothing, the knowledge and attention paid to clothing, the concern and curiosity a person has about his/her own clothing and that of others" (Gurel, 1974, p.12). Because of the dependence on appearance as an outlet of exploratory tendencies for college-aged students, the sample used in the present study, we hypothesize that OSL will predict level of Clothing Interest. In particular, we posit a positive association between OSL and Experimenting with Appearance (EA), a Clothing Interest factor. EA represents an interest in the activity of trying out new styles of clothing, receptiveness to innovations in clothing, and active seeking of something new for the sheer enjoyment of the novel experience (Gurel & Gurel, 1979). It is the process of creative experimentation with one's appearance. These behaviors coincide with exploratory tendencies described above. Interest in trying out new styles of clothing and receptiveness to innovation in clothing reflect the exploratory tendency factor of innovativeness (i.e., eagerness to know and try something new). Receptiveness to new clothing styles may intimate the exploratory tendency of brand switching for change also. The sheer enjoyment of seeking something new reflects the tendency of exploration through shopping. Therefore, we posit:

H4: *OSL will positively predict EA.*

Items in the EA factor stress trying new or different apparel products to see how one looks. The "playful orientation" (Cosby, 2001) in trying new products captures the experience-oriented nature of the factor and the "interest in novel forms of clothing" (Cosby, 2001) captures its product-oriented nature. Body-scanning may provide a stimulating experience as well as result in a unique end product to fulfill high EA individuals' tendencies toward curiosity and innovation. EA factor items emphasize trying on apparel and assessing the interaction of the product on the body. How the product looks on the body is important to the high EA individual. Accordingly, we postulate:

H5: *EA will positively predict trying body-scanning as an exciting experience.*

H6: *EA will positively predict using body-scanning to create a better fitting product.*

High OSL individuals were more likely than low OSL individuals to be fashion innovators (Kwon & Workman, 1996; Stanforth, 1995). Fashion innovators use apparel to differentiate themselves from others and express their individuality (Stanforth, 1995). The Clothing Interest factor, Enhancement of Individuality (EI) represents a similar usage of apparel. High EI individuals are interested in creating a distinctive appearance (Gurel & Gurel, 1979). High EI is associated with using fashion products for creating an appearance that has a sense of uniqueness and attracts attention. The linkages between OSL and fashion innovation and between fashion innovation and expression of individuality or distinctiveness suggest that OSL may be related to EI. Similar to the postulated association between OSL and EA, we offer a further hypothesis:

H7: *OSL will positively predict EI.*

Along with using appearance to distinguish themselves from others, high EI individuals also use apparel as a symbol of their status. Body-scanning may supply both elements for high EI individuals. In body-scanning, body measurements are combined to create a product unlike those available on the market. If a customer is not satisfied with the sizes of the product sold off the shelf, he or she can order a mass customized product with an individual fit ("Mass customization." 1996). Custom made products have been a sign of status since the industrial revolution (Lardner, 1999), making the wearer feel unique. The customized fit resulting from body-scanning, similar to the fit of a fully custom made product, may provide a level of status for the wearer. Therefore, EI will predict using body-scanning to create a better fitting product. We propose:

H8: *EI will positively predict using body-scanning to create a better fitting product.*

METHOD

Subjects

Five hundred and twenty-one students from five public university campuses representing different regions (East coast, West coast, North central, Southwest and Southeast) of the United States participated in this study in exchange for extra credit points towards their course grades. The subjects came from a variety of majors, with business majors and textiles and clothing majors each comprising about 25% of the total. About half (48.6%) shopped for clothing at least once a month and about 30% shopped every week. The average age for the 423 female and 91 male subjects answering the gender question was 21 years old. The age and college education level of this convenience sample offered several advantages. Subjects of this description were likely to have higher than average OSL scores (Raju, 1980), thus ensuring a significant range in OSL scores to test the theoretical propositions. Whereas the age of the university subjects does not permit generalizing results to all U.S. consumers, the age of the sample coincides with the age group most wanting more customized products and services (Gardyn, 2001) and most likely to adapt to interfacing with body-scanning equipment (Eisenberg, 1998). The present subjects were experienced with using computers ($M=3.39$, on a -4 to $+4$ scale) and liked using them ($M=2.73$), which are two factors found to be important in the acceptance of mass customization (Pisut, Anderson, & Grasso, 1998; Wu, Anderson,

& Ulrich, 1998). Therefore, the college student may be a prime target customer for mass customization. Use of the student sample also furthers research-based (Fiore et al., 2001; Lee et al., 2002, Pisut et al., 1998; Wu et al., 1998) understanding of this target market's response to mass customization.

Instrument

Some of the scales used in the present instrument were taken from Fiore et al.'s (2001) instrument used to examine the acceptance of mass customization options with 135 subjects from a Midwestern university. Similar to the Fiore et al. study, all items used in testing the hypotheses were scored on nine-point scales from -4 (strongly disagree) to 4 (strongly agree). Whereas a variety of scales have been used to measure OSL and new scales have been introduced (Grande, 2000), we retained the 40 item Arousal Seeking Tendency (AST) Scale used in the Fiore et al. study. This scale was implemented because research (Steenkamp & Baumgartner, 1992; Wahlers et al., 1986) confirms that the AST Scale was the best measure of consumer exploratory behavior tendencies of OSL. The AST Scale measures preference for arousal from change, unusual stimuli, risk, sensuality, and new environments. The scale's developers (Mehrabian & Russell, 1974), and other researchers (see Steenkamp & Baumgartner, 1992) found the AST Scale to be reliable and valid.

The Fiore et al. study (2001) did not measure experience-oriented and product-oriented clothing interest. To accomplish this, we used the only scale we found available that tapped both product and experience aspects of clothing interest or involvement, the Clothing Interest Scale (Gurel & Gurel, 1979). We utilized eight items loading at .50 or above in the scale's experience-oriented factor, Experimenting with Appearance, and the five items loading at the same level in the scale's product-oriented factor, Enhancement of Individuality according to the Gurel & Gurel (1979) study. The scale was found to have construct validity (Gurel & Deemer, 1975).

To assess willingness to use body-scanning, subjects read a short description of body-scanning then responded to four items from the Fiore et al. (2001) study. These items tapped the importance that the apparel industry offers body-scanning, interest in using body-scanning, willingness to pay more for body scanned products, and willingness to spend more time creating a body scanned product. Willingness to try body-scanning as an exciting experience and for creating a better fitting product completed the questions needed to test the hypotheses. Demographic information gathered from subjects included age, college major, gender, shopping frequency, and computer usage. Colleagues at four cooperating universities were paid \$100 to collect data from students on their respective campuses. Confidentiality of responses was ensured through identification numbers used during data analysis.

RESULTS

Preliminary Data Analysis

Prior to final data analysis, principal component analyses were conducted separately on the multi-item AST Scale, EA measure, and EI measure. Similar to the results of Steenkamp and Baumgartner (1992) and Wahlers, Dunn, and Etzel (1986), the eigenvalues from principal

component analysis of the AST Scale did not support the five-dimensional structure defined by Mehrabian and Russell (1974). Indiscriminate factor loadings of items for the 13 factors with eigenvalues greater than one suggested that one variable, the sum of these items, would be the best solution for the present study. Supporting the factor structure defined by Gurel and Gurel (1979), items of Clothing Interest included in the present study formed two factors: EA and EI (See Table 1).

Alpha coefficients for the multi-item measures for the AST Scale, EA, EI, and willingness to use body-scanning were .88, .91, .79, and .89, respectively. Therefore, measures used to test the proposed hypotheses were reliable.

TABLE 1
Principal Component Analysis for Two Clothing Interest Factors,
Experimenting with Appearance (EA), and Enhancement of Individuality (EI)

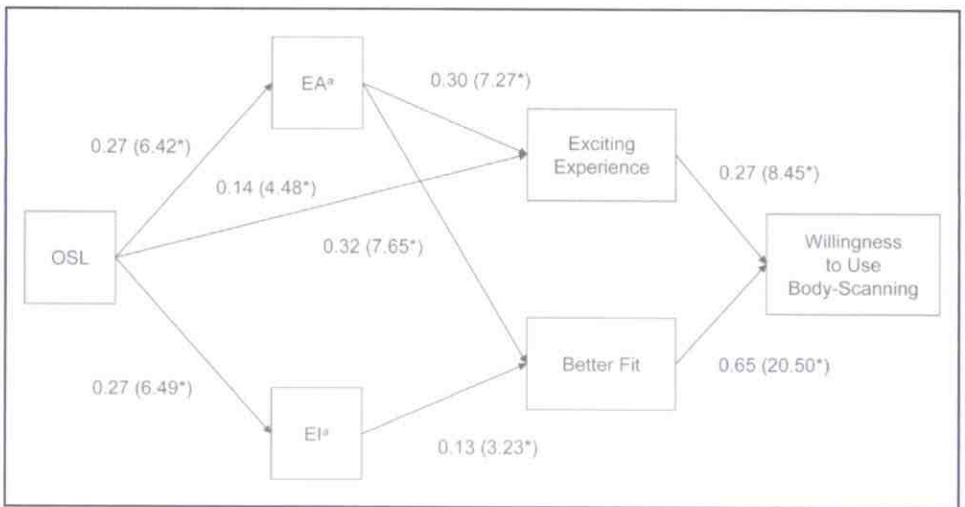
Variables and Sample Items	Factor Loading
Experimenting with Appearance (Eigenvalue = 6.41, variance explained = 49.31%)	
I try on some of the newest clothes each season to see how I look in the styles.	.81
It's fun to try on different garments and accessories to see how they look together.	.83
I try on clothes in shops just to see how I will look in them without really planning to buy.	.77
I enjoy trying on shoes of different styles or colors.	.82
My friends and I try each other's clothes to see how we look in them.	.75
I read magazines and newspapers to find out what is new in clothing.	.75
I experiment with new or different hairstyles to see how I will look.	.63
I like to know what is new in clothing even if none of my friends care.	.71
Enhancement of Individuality (Eigenvalue = 1.53, variance explained = 11.78%)	
I try to buy clothes that are very unusual.	.76
When new fashion appears on the market I am one of the first to own them.	.63
I enjoy wearing very different clothing even though I attract attention.	.79
I avoid wearing certain clothes because they do not make me feel distinctive.	.65
I have clothes that I don't wear because everyone else has them.	.63

The conceptual model consists of one exogenous (OSL) and five endogenous constructs (EA, EI, having an exciting experience, creating a better fitting product, and willingness to use body-scanning). The eight hypotheses based on the conceptual model (see Figure 1) were tested concurrently using the analysis of moment structures (AMOS) based on correlations among the construct measures. Correlations for the model constructs appear in Table 2.

TABLE 2
Model Construct Correlations

Model Constructs	Correlations					
	1	2	3	4	5	6
OSL	-					
EA	.27	-				
EI	.27	.00	-			
Exciting experience	.28	.33	.13	-		
Better fitting product	.20	.32	.13	.77	-	
Willingness to use body-scanning	.21	.36	.09	.78	.87	-

Figure 2 provides coefficients and t values for each path as well as the fit indices of the model. The results of the AMOS for the conceptual model revealed a chi-square of 9.31 (df = 4, p ≤ 0.05), GFI of 0.99, adjusted GFI of 0.97, RMSEA of 0.05, and NFI of 0.99 which indicates that the conceptual model fits the data quite well.



$\chi^2 = 9.31$ (df = 4, p = 0.054)

GFI = .99, AGFI = .97, RMSEA = .05

R2 of willingness to use body-scanning: .79

(Path coefficients are indicated, t-values are in parentheses, *p ≤ .001)

a Experimenting with Appearance (EA) and Enhancement of Individuality (EI) are Clothing Interest factors

Figure 2. Statistical results for structural model of psychological traits, motivations, and willingness to use body-scanning.

Hypothesis Testing

All hypothesized relationships were statistically significant. Hypothesis 1, predicting a positive relationship between creating a better fitting product and willingness to use body-scanning was supported ($t = 20.50, p \leq .001$). The proposed relationship between trying body-scanning as an exciting experience and willingness to use body-scanning (Hypothesis 2) was also supported ($t = 8.45, p \leq .001$). The results show that both creating a better fitting product and having an exciting experience were important motivations for willingness to use body-scanning.

Hypotheses 3, 5, 6, and 8 examined the effect of psychological traits on motivations for using mass customization. Hypothesis 3, predicting a positive relationship between OSL and one motivation for using body-scanning, was statistically supported ($t = 4.48, p \leq .001$). Results revealed that high OSL individuals were motivated by an exciting experience offered by the body-scanning process. Hypotheses 5, 6, and 8, predicting positive relationships between Clothing Interest factors (EA, EI) and motivations for using body-scanning, also received support. Pertaining to hypothesis 5, EA positively predicted trying body-scanning as an exciting experience ($t = 7.27, p \leq .001$). Likewise regarding hypothesis 6, EA positively predicted using body-scanning for creating a better fitting product ($t = 7.65, p \leq .001$). Hypothesis 8, predicting a positive relationship between EI and using body-scanning for creating a better fitting product, was supported ($t = 3.23, p \leq .001$). These results indicate that high EA individuals were motivated to use body-scanning because of the exciting experience and for creating a better fitting product whereas EI individuals were motivated by creating a better fitting product.

Finally, as hypotheses 4 and 7 proposed, OSL positively predicted EA ($t = 6.42, p \leq .001$) and EI ($t = 6.49, p \leq .001$). The results indicate that high OSL individuals, more than low OSL individuals, have high levels of the Clothing Interest factors, EA and EI.

To further substantiate the effects of psychological traits and motivations on willingness to use body-scanning, we conducted decomposition of total, direct, and indirect effects for the model (Table 3). The total effects results indicate that all three psychological variable variables (OSL, EA, EI) and two motivation variables (trying body-scanning as an exciting experience and a creating a better fitting product) were significantly ($p \leq .005$) related to willingness to use body-scanning. Only the two motivation factors, using body-scanning as an exciting experience and for creating a better fitting product, had significant ($p \leq .005$) direct effects on willingness to use body-scanning. The motivation to create a better fitting product had the strongest total and direct effect on willingness to use body-scanning. The psychological variables (EA, EI, and OSL) had significant ($p \leq .005$) indirect effects on willingness to use body-scanning, suggesting the important mediating effects of the two motivation variables. EA and OSL had significant ($p \leq .005$) direct effects on using body-scanning as an exciting experience, whereas EA and EI had significant ($p \leq .005$) direct effects on using body-scanning for creating a better fitting product. OSL had significant ($p \leq .005$) indirect effects on the two motivations, using body-scanning as an exciting experience and for creating a better fitting product.

TABLE 3
Decomposition of Total, Direct, and Indirect Effects for the Model

Dependent Variable Independent Variable	Total Effects	Direct Effects	Indirect Effects
Willingness to use body-scanning			
Exciting experience	0.27*	0.27*	-
Better fitting product	0.65*	0.65*	-
EA	0.28*	-	0.28*
EI	0.09*	-	0.09*
OSL	0.14*	-	0.14*
Exciting experience			
EA	0.30*	0.30*	-
OSL	0.22*	0.14*	0.08*
Better fitting product			
EA	0.32*	0.32*	-
EI	0.13*	0.13*	-
OSL	0.12*	-	0.12*
EA			
OSL	0.27*	0.27*	-
EI			
OSL	0.27*	0.27*	-

DISCUSSION

Pine and Gilmore (1999) proposed that business should no longer simply focus on providing a product or service, but also create an experience for the customer because present day consumers increasingly derive value from experiences. Experiences are stimulating events, created when providing a service, that contribute intrinsic pleasure (i.e., pleasure for its own sake; Hirschman and Holbrook, 1982) rather than utilitarian benefits. To create an experience, a business must engage customers in a pleasurable and memorable event during the sale of a product and while delivering a service. The present study illustrates that the service as well as the experience may affect customers.

Motivations for Using Body-scanning

The present study supports the importance of experience aspects of mass customization for the consumer. According to our findings, today's consumer may turn to body-scanning to fulfill the desire for an experience as well as for the service of creating a better fitting product. These findings support Fiore et al.'s (2001) conclusion that mass customization of fashion products not only provides value for the customer through the product but also through the experience. The analysis also corroborates Biedron and Anderson-Connell's (1999) findings

that enjoyment from shopping was positively correlated with interest in using mass customization. The present study illustrates the relative contribution of two motivation variables to willingness to use body-scanning; creating a better fitting product explained more variance for willingness to use body-scanning than did trying body-scanning as an exciting experience. This suggests that careful development of body-scanning services is essential to ensure the resulting product meets the fit expectations of the customer. However, a memorable body-scanning experience may draw customers and differentiate among mass customizers when body-scanning options become more numerous. Therefore, for the apparel business incorporating body-scanning, the body-scanning service should be scrutinized to determine ways to ensure satisfaction with the resulting product while enriching the experience. Making the process quick and non-eventful, and thus less memorable, may actually decrease the draw for some customers. To effectively market body-scanning, a firm should promote both the resulting better fitting product and the exciting experience of the process.

Recognizing that both the resulting product from the service and the experience are important to the customer is only the beginning step for the apparel firm incorporating body-scanning. Specific factors affecting satisfaction with the service and experience should be explored. Research should explore how mass customization process factors contribute to the better fitting product and the stimulating experience. For instance, what roles do sheer novelty, type of advanced technology, human interaction, and active customer participation play during the service and experience? Perhaps human interaction with staff to facilitate the use of advanced technology provides the best service encounter and a better fitting product. If the experience from body-scanning were due to sheer novelty of the process or the intriguing nature of cutting-edge technology, then companies would have to continually update the process and technology to satiate the desire for new experiences or risk losing the customer to other firms offering different body-scanning services.

Moreover, Pine and Gilmore (1999) recommended that a business should enhance the Esthetic, Educational, Entertainment, and Escapist realms of the experience for the customer. These may be important factors affecting satisfaction with the mass customization experience. The Esthetic realm of the experience involves a rich multi-sensory environment from natural elements and human-made elements such as architecture, interior design, and landscape elements. The Educational realm consists of information provided to the customer to increase his/her knowledge or skill. Entertainment entails the act of occupying a customer's attention agreeably. The Escapist realm involves immersion into another reality where the customer is an active participant or character in that reality.

In relation to the present body-scanning experience, the theatrical curtained room with flashing lights and music may provide the multi-sensory Esthetic realm. According to Pine and Gilmore (1998), an experience with all four realms hits the "sweet spot," providing the most rewarding experience for the customer. Future research may measure the effectiveness of adding Educational, Entertainment, and Escapist components to the Esthetic realm of the body-scanning experience. For example, one could explore customer response when the body-scanning experience also includes an educational video explaining the technology, followed by entertainment from morphing body images and apparel products, and continuing with the customer taking the controls as the captain of the futuristic voyage created by the high-tech environment.

Optimum Stimulation Level, Clothing Interest, and Motivations for Using Body-scanning

As hypothesized, OSL predicted using body-scanning for its exciting experience. This result aligns with previous findings for the relationship between OSL and consumer behaviors. The exciting experience of body-scanning appears to be an outlet for high OSL individuals' innovativeness (i.e., eagerness to know about or try new products or services) reported by Steenkamp and Baumgartner (1992). Because the product resulting from body-scanning cannot be tried on before purchase and the customer must wait for the product to be manufactured and delivered, this product involves more risk than mass-produced products. Hence, high OSL individuals' willingness to use body-scanning supports the reported positive association between OSL and consumer-oriented risk-taking (Steenkamp & Baumgartner, 1992). The body-scanning process involves a higher level of consumer input and stimulation than purchasing off-the-rack products. Therefore, high OSL individuals' willingness to use body-scanning supports the positive associations between OSL and level of consumer effort and stimulation during shopping (Hanna & Wagle, 1989; Wahlers et al., 1986).

Elliott Ettenberg (1999), chairman and chief executive officer of New York-based Customer Strategies Worldwide, stated that marketing itself should be mass customized, which requires moving beyond broad demographic targeting to psychographic profiling of customers. The present study shows that there are psychographic variables that could be used in marketing to the customer of mass customized apparel product. OSL may guide development of marketing strategies. Marketing to high OSL customers, who are more willing to use body-scanning than low OSL customers, may entail emphasizing the newness and exciting nature of the experience rather than downplaying its risks. Convenience may not be of major concern to the customer of body-scanning; they are willing to put forth more effort during shopping. To further refine the psychographic profile, research could explore relationships between willingness to use body-scanning and exploratory tendency factors of innovativeness (i.e., eagerness to know about or try new products or services), brand switching for change or novelty, and selecting products that involve perceived risk. The results of this line of study could also aid the development of the body-scanning service and experience. If exploratory tendencies were associated with willingness to use body-scanning, then continued evolution of the body-scanning service and experience would help maintain desired novelty. Additionally, ample customer information showcasing the behind-the-scenes processes could help pique the customer's interest.

High OSL individuals have a multitude of ways for satisfying their exploratory tendencies. Apparel or fashion appears to be an outlet for the exploratory tendencies of the college-aged subjects in the present study. OSL predicted EA and trying body-scanning as an exciting experience, which suggests that attention to fashion change and the process of experimentation with appearance may satisfy exploratory tendencies for high OSL college-aged consumers. OSL also predicted EI, suggesting that the resulting product, an appearance distinctive from others, may also feed the exploratory tendencies of high OSL college-aged consumers. These findings, while reinforcing the relationship between OSL and willingness to use mass customization found in previous research (Fiore et al., 2001), also refine the characteristics of the segment willing to use body-scanning. Based on the path coefficients for OSL to EA and EI, both the process of experimenting with appearance and the resulting

product, a distinctive appearance, appear to provide the stimulation required by high OSL individuals.

Our findings support the proposed motivations underlying EA and EI. EA entails using body-scanning for its exciting experience and better fitting product, whereas EI entails using body-scanning for the better fitting product. These results suggest that customers should be given the option to bypass the body-scanning experience and gain direct access to the body-scanning service in instances when the customer is mainly interested in the better fitting product. Customers with high levels of EI may not be enticed by the exciting experience. Future research should explore whether the exciting experience is advantageous or detrimental to customers with a high level of EI and a low level of EA.

In conclusion, the two motivations, trying body-scanning as an exciting experience and for creating a better fitting product, contributed to willingness to use body-scanning, but creating the better fitting product appears to be the primary motivation. When developing a body-scanning program, the firm should ensure that the experience does not detract from the ability to produce a good-fitting product and should tout the resulting better fitting product in all marketing efforts. The experience may be the proverbial icing on the cake for some customers, but not all customers.

REFERENCES

- Biedron, M., & Anderson-Connell, L. J. (1999). Profiling consumer interest in mass customization. *International Textiles and Apparel Association Proceedings*, (pp. 95-96). Monument, CO: ITAA.
- Cosby, S. (2001). Clothing interest, clothing satisfaction, and self perception of sociability, emotional stability, and dominance. *Social Behavior and Personality*, 29, 145-152.
- Creekmore, A. M. (1971). *Methods for measuring clothing variables* (Michigan Agricultural Experiment Station Project No. 783). Michigan State University.
- Duray, R., & Milligan, G. W. (1999). Improving customer satisfaction through mass customization. *Quality Progress*, 32 (8), 60-66.
- Duray, R., Ward, P. T., Milligan, G. W., & Berry, W. L. (2000). Approaches to mass customization: Configurations and empirical validation. *Journal of Operations Management*, 18, 605-635.
- Eisenberg, A. (1998, August 13). If the shoe fits, click it. *New York Times*, pp. G1, G6.
- Ettenberg, E. (1999). Seller beware. *Stores*, 81(5), 30.
- Fiore, A. M., Lee, S-E., Kunz, G. & Campbell, J.R. (2001). Relationships between optimum stimulation level and willingness to use mass customization options. *Journal of Fashion Marketing and Management*, 5, 99-107.
- Gardyn, R. (2001, July 12). Swap Meet. *American Demographics*, pp. 51-55.
- Gilmore, J. H., & Pine II, B. J. (1997, May/June). Beyond goods and services: Staging experiences and guiding transformations, *Strategy and Leadership*, 11-18.
- Grande, I. (2000). A structural equation modeling approach for assessing the dimensions of the optimum stimulation level. *Journal of International Consumer Marketing*, 12(2), 7-26.

- Gurel, L. M. (1974). *Dimensions of Clothing Interest Based on Factor Analysis of Creekmore's Clothing Questionnaire*. Unpublished doctoral dissertation, University of North Carolina at Greensboro.
- Gurel, L. M., & Deemer, E. M. (1975). Construct validity of Creekmore's clothing questionnaire. *Home Economics Research Journal*, 4, 61-68.
- Gurel, L. M., & Gurel, L. (1979). Clothing interest: conceptualization and measurement. *Home Economics Research Journal*, 7, 274-282.
- Hanna, N., & Wagle, J. S. (1989). Who is your satisfied customer? *Journal of Consumer Marketing*, 6(1), 53-61.
- Hetzl, P. (1998). The current state of the clothing industry and market in France. *Journal of Fashion Marketing and Management*, 2, 386-391.
- Hirschman, E. C., & Holbrook, M. B. (1982). Hedonic consumption: emerging concepts, methods and propositions. *Journal of Marketing*, 46, 92-101.
- Huffman, C., & Kahn, B. E. (1998). Variety for sale: Mass customization or mass confusion. *Journal of Retailing*, 74, 491-513.
- Istook, C. L., & Hwang, S.-J. (2001). 3D body scanning systems with applications to the apparel industry. *Journal of Fashion Marketing and Management*, 5, 120-132.
- Kamali, N., & Loker, S. (2002, July). Mass customization: On-line consumer involvement in product design. *Journal of Computer-Mediated Communication*, 7(4). Retrieved December 9, 2002 from the World Wide Web: <http://www.ascusc.org/jcmc/vol7/issue4/loker.html>.
- Kish, G., & Donnenwerth, G. (1969). Interests and stimulus-seeking. *Journal of Counseling Psychology*, 16, 551-556.
- Knight, M. (1999, December 27). Taking it personally at Levi's. *Daily News Record*, p. 10.
- Kwon, Y., & Workman, J. E. (1996). Relationship of optimum stimulation level to fashion behavior. *Clothing and Textiles Research Journal*, 14, 249-256.
- Lardner, J. (1999, July 5). Your every command. *U. S. News and World Report*, pp. 44-45.
- Lee, S.-E., Kunz, G., Fiore, A. M., & Campbell, J. R. (2002). Acceptance of mass customization of apparel: Merchandising issues associated with preference for product, process, and place. *Clothing and Textiles Research Journal*, 20, 138-146.
- Malone, S. (1998, June). Custom foot falls into bankruptcy, but concept lives on, says founder. *Footwear News*, 54(23), p. 5.
- Malone, S. (1999, July 27). Making strides in mass customization. *Women's Wear Daily*, p. 12.
- Martin, J. 1997. Give 'em exactly what they want. *Fortune*, November 10.
- Mehrabian, A., & Russell, J. A. (1974). *An Approach to Environmental Psychology*. Cambridge, MA: MIT Press.
- Minshall, B., Winakor, G., & Swinney, J. L. (1982). Fashion preferences of males and females, risks perceived, and temporal quality of styles. *Home Economics Research Journal*, 10, 369-379.
- Pine II, B. J. (1993). *Mass Customization*. Boston, MA: Harvard Business School Press.
- Pine II, B. J. (1996, January). Network Transformation: Individualizing your customer approach. Serve each customer efficiently and uniquely. *Business Communications Review*, 1-6.
- Pine II, B. J. (1998). You're only as agile as your customers think. *Agility & Global Competition*, 2(2), 24-35.
- Pine II, B. J., and Gilmore, J. H. (1998). Welcome to the experience economy. *Harvard Business Review*, 76(4), 97-104.

- Pine II, B. J., and Gilmore, J. H. (1999). *The experience economy: Work is theater and every business a stage*. Boston, MA: Harvard Business School Press.
- Pisut, G., Anderson, L. J., & Grasso, M. (1998). Profiling consumer interest in mass customization. *International Textiles and Apparel Association Proceedings*, (p. 39). Monument, CO: ITAA.
- Raju, P. S. (1980). Optimum stimulation level: its relationship to personality, demographics, and exploratory behavior. *Journal of Consumer Research*, 7, 272-282.
- Shih, C. (1998). Conceptualizing consumer experiences in cyberspace. *European Journal of Marketing*, 32(7/8), 655-663.
- Stanforth, N. (1995). Fashion innovators, sensation seeking, and clothing individualists. *Perceptual and Motor Skills*, 81, 1203-1210.
- Steenkamp, J. E. M., & Baumgartner, H. (1992). The role of optimum stimulation level in exploratory consumer behavior. *Journal of Consumer Research*, 19, 434-448.
- Stylios, G. K., Han, F., & Wan, T. R. (2001). A remote, on-line 3-D human measurement and reconstruction approach for virtual wearer trials in global retailing. *International Journal of Clothing Science and Technology*, 13, 65 -75.
- Taplin, I. M. (1999). Continuity and change in the US apparel industry: a statistical profile. *Journal of Fashion Marketing and Management*, 3, 360-368.
- Wahlers, R. G., Dunn, M. G., & Etzel, M. J. (1986). The congruence of alternative OSL measures with consumer exploratory behavior tendencies. In Lutz, R. (Ed.), *Advances in Consumer Research*, 13 (pp. 398-402). Association of Consumer Research: Provo, UT.
- Wilson, J. (1999). Fashion and marketing conference keynote address by John Wilson OBE. *Journal of Fashion Marketing and Management*, 3, 370-376.
- Wu, W., Anderson, L. J., & Ulrich, P. (1998). An investigation of consumer interest in co-design for mass customization of apparel. *International Textiles and Apparel Association Proceedings*, (pp. 38-39). Monument, CO: ITAA.
- Yu, W., Ng, R., & Yan, S. (2001, October). A new approach to 3-D body scanning. *Textile Asia*, 23-26.
- Zuckerman, M. (1971). Dimensions of sensation seeking. *Journal of Consulting Psychology*, 36, 45-52.