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# ANTECEDENTS AND CONSEQUENCES OF CONSUMER – CUSTOMIZED PRODUCT IDENTIFICATION: AN IDENTITY THEORY PERSPECTIVE

SoYeon Kwon  
*Purdue University*

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ANTECEDENTS AND CONSEQUENCES OF CONSUMER-CUSTOMIZED PRODUCT IDENTIFICATION: AN IDENTITY THEORY PERSPECTIVE

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Is approved by the final examining committee:

Christopher J. Kowal

Chair

Jonathan J. Bauchet

David A. Evans

James G. Anderson

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Approved by: Richard A. Feinberg

Head of the Departmental Graduate Program

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ANTECEDENTS AND CONSEQUENCES OF CONSUMER–CUSTOMIZED  
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## ABSTRACT

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Customization is considered one of the key sources of value creation in a highly competitive and segmented market. Recent research has demonstrated that the key to successful customization experiences lies in the degree to which consumers feel connected to a product that is customized. This study investigated consumers' psychological connection to customized products by exploring the variable, "consumer-customized product identification (C-C identification)." Building upon identity theory and research on "extended self," this study investigated (1) two key antecedents that influence C-C identification, (2) attitudinal and behavioral consequences of C-C identification, and (3) the moderating role of product involvement in C-C identification development.

In order to examine the proposed hypotheses, a scenario-based survey was administered with three product categories (i.e., personalized media, fashion & textiles, and food). A similar pattern of results was found across the three product categories. This study demonstrated that consumers developed identification with customized products when the value of the customization experiences was congruent with consumers' sense of self (i.e., identity congruence) and when the customized products signaled consumers' unique identity to others (i.e., identity distinctiveness). Consumers' identification with customized products enhanced favorable attitude toward customized products and

satisfaction with retailers offering the customization experiences. Also, the impact of antecedents on consumers' identification with customized products varied by level of involvement with the product category.

By exploring consumer-product identification in an online customization setting, this study provides empirical evidence supporting identity theory and research on "extended self," which articulates consumer identification with marketing objectives (i.e., customized product). The findings of this study will also guide retail marketers to an understanding of the psychological mechanisms that enhance online customization experiences, which will in turn cultivate consumers' relationships with retailers.

## CHAPTER 1 – INTRODUCTION

### Overview

Customization refers to “the use of flexible processes and organizational structure to produce varied and often individually customized products and services at the low cost of a standardized, mass-production system” (Hart, 1995, p. 36). Academic researchers consider customization to be one of the key sources of value creation in a highly competitive and segmented market (Da Silveira, Borenstein, & Fogliatto, 2001; Prahalad & Ramaswamy, 2004; Simonson, 2005). A large number of companies (e.g., NikeID, Coca Cola) have also been paying attention to customization strategies that allow consumers to participate in the process of designing, developing, and/or implementing products and services. Customization is found in a wide range of categories, including t-shirts, shoes, mugs, greeting cards, and sodas (Franke & Piller, 2004; Lampel & Mintzberg, 1996; Ogawa & Piller, 2006; Randall, Terwiesch, & Ulrich, 2007).

Particularly with the development of relevant technology (Ansari & Mela, 2003; Duray, Ward, Milligan, & Berry, 2000; Sheth, Sisodia, & Sharma, 2000) and the increasing customer demand for customization (Gilmore & Pine, 1997), firms are implementing various new formats to implement customization. For example, Threadless, a young Chicago-based fashion company, is well-known for its strong online community. At Threadless.com, customers not only submit their own designs but also evaluate the

attractiveness of others' new design ideas every week. Threadless relies on this rating information, in which each design is evaluated by 1,500 users on average, to determine which design should be developed and manufactured (Ogawa & Piller, 2006). Customer participation in the process of product design and development enabled Threadless to achieve \$30 million in revenue in 2009 and a 200% growth rate each year (Burkitt, 2010; Chafkin, 2008). This is a considerable level of growth, given that the average growth rate of e-commerce sales is in single digits, and offline retail sales have barely grown at all (Miller, 2009).

However, perhaps due to the recency of this concept, research on customization is still in its infancy and has limited focuses. Three main research streams have been identified (for a review, see Fogliatto, da Silveira, & Borenstein, 2012): (1) the financial/economic performance of customization (Franke & Piller, 2004; Piller, Moeslein, & Stotko, 2004), (2) the value of customization from the consumer's perspective (Franke, Keinz, & Steger, 2009; Franke & Schreier, 2008; Franke, Schreier, & Kaiser, 2010; Merle, Chandon, Roux, & Alizon, 2010), and (3) factors that optimize customization processes (for a review, see Fogliatto et al., 2012). First, empirical evidence on customization that contributes to economic benefits shows that customers' willingness to pay premium prices for customized products is greater than for comparable mass-produced products (Franke et al., 2009; Franke & Piller, 2004). Second, Merle et al. (2010) have developed a taxonomy of five customization values from the consumer viewpoint. Three values are associated with customized products (utilitarian value, uniqueness value, and self-expressiveness value) and two values are associated with customization processes (hedonic value and creative achievement value). Third,

research has identified various factors that facilitate and optimize customization processes, such as customer demand (Franke et al., 2010; Merle et al., 2010), markets (Mendelson & Parlaktürk, 2008; Syam & Kumar, 2006), value chain (Mikkola & Skjøtt-Larsen, 2004; Salvador, Rungtusanatham, & Forza, 2004), and technology (Huang, Li, Lau, & Chen, 2007; Ninan & Siddique, 2006). This study attempts to contribute to the second stream of research.

Research revealing customization benefits from the consumer's perspective (Merle et al., 2010) demonstrates that consumers benefit from a customization experience in which they are able to signal and express their identities by integrating their preferences, values, and goals into products (Atakan, Bagozzi, & Yoon, 2014a; Atakan, Bagozzi, & Yoon, 2014b; Miceli, Raimondo, & Farace, 2013; Troye & Supphellen, 2012). At Threadless.com, for example, customers submit their own designs and wait for their designs to be voted on and approved by other users in the community while at the same time participating in public votes on products that others have designed (Ogawa & Piller, 2006). By creating their own designs and approving others' designs, consumers can communicate their personal symbols, values, ideas, and identities in the community (Atakan et al., 2014a; 2014b; Miceli et al., 2013). So consumers are able to inject their identity into the process and outcome of customization.

To date, only a few studies have investigated the role of customization from the identity signaling perspective (e.g., Franke & Schreier, 2008; Miceli et al., 2013). In particular, the procedural mechanism by which customization leads consumers to signal their identity in customized products (i.e., consumer-customized product identification) has not been much explored. Because favorable consequences come not from the

customization process (e.g., Fang, 2008; Norton, Mochon, & Ariely, 2012; Zipkin, 1997) but rather from the degree to which consumers identify themselves with the customized product (Atakan et al., 2014a; 2014b; Miceli et al., 2013; Troye & Supphellen, 2012), it is important to investigate what drives consumers to feel connected to a product during customization.

Furthermore, this study aims to investigate individual characteristics which may play a role in determining consumer responses to customization. An individual characteristic of interest in this study is a person's product involvement, referring to perceived personal relevance attached to the acquisition, consumption, and disposition of a good, service, or idea (Celsi & Olson, 1988; Richins & Bloch, 1986). People have different degrees of product involvement, and this motivation infuses their brand and product choices differently (e.g., Mazodier & Merunka, 2014; Taylor, Strutton, & Thompson, 2012; Stokburger-Sauer, Ratneshwar, & Sen, 2012). This individual variable thus might strengthen or weaken how consumers perceive their customization experiences with products.

#### Statement of Purpose

Collectively, two important research questions are proposed: (1) Given that customization enhances consumers' identity-related responses, under what conditions can customization help consumers identify themselves with the products being customized?, and (2) If and how does consumers' involvement in the product moderate the degree to which consumers identify themselves with products during the customization experience?



To address these questions, this study draws on the concept of “extended self” (Belk, 1988; Dittmar, 1992; Kleine, Kleine, & Kernan, 1993; Pierce, Kostova, Dirks, 2003; Richins, 1994) and identity theory (Burke, 1980; Burke & Reitzes, 1981; Stryker, 1968; 1980). The study proposes that, by identifying product characteristics that enhance a consumer’s identification with the customized product, the company can develop a more optimal customization process that would lead to improved brand evaluation. Specific purposes of this study are to investigate: (1) how two characteristics of a product a consumer customizes (i.e., distinctiveness and identity congruence) influence the consumer’s perceived identification with the customized product (a consumer’s perception of a customized product as a symbolic meaning of his/her identity), (2) how consumer–customized product identification influences a consumer’s responses to the customized product itself (attitude toward the product) as well as the brand (satisfaction with the brand and brand loyalty), and (3) how consumers’ product involvement plays the role of moderator in the consumer–customized product identification development as a function of distinctiveness and identity congruence.

## CHAPTER 2 – REVIEW OF LITERATURE

Chapter 2 provides a detailed review of the literature and discussion on the conceptual frameworks. This review builds and expands upon past research conducted in the area of consumer behavior, organizational identification, and marketing studies. Empirical reviews and definitions of consumer-customized product identification, identity distinctiveness, identity congruence, attitude toward customized products, satisfaction with retailers, and product involvement are provided in order to develop a comprehensive understanding of the relationships among the constructs.

### Theoretical Framework

#### Extended Self

Belk's (1988) "extended self" concept provides a theoretical foundation for how a customization process affects the relationship between a consumer and a product (Pierce et al., 2003). Belk (1988) introduced the term "extended self" to explain the relationship between possessions and sense of self. Drawing on a wide range of literature including psychology, consumer research, anthropology, sociology, and material and popular culture studies, Belk (1988) supported the simple but compelling premise that "our possessions are a major contributor to and reflection of our identities" (p. 139). People have an inherent motivation to make a part of self by creating or altering objects (Beaglehole, 1932). The objects to which people direct their efforts, time, attention, and

psychic energy become their “extended self” because such objects have grown or emerged from their own self (Belk, 1988; Csikszentmihalyi & Rochberg-Halton, 1981). Possessing an object to which a person integrates him/herself is regarded not only as an extension of self but also as an instrument for maintaining and developing the sense of self (Belk, 1988).

The basic premise of extended self, in which possessions contribute to and reflect a person’s identities, has gained support from researchers in the areas of consumer behavior, psychology, and sociology (Csikszentmihalyi & Rochberg-Halton, 1981; Malhotra, 1988; Prentice, 1987; Shamir, 1991; Snyder & Ickes, 1985). Researchers show that products not only serve utilitarian functions but also serve people’s need to express their sense of self (Csikszentmihalyi & Rochberg-Halton, 1981; Levy, 1959; Malhotra, 1988; McCracken, 1986; Prentice, 1987). That is, by imbuing symbolic meaning to products, people are able not only to establish and maintain a sense of self but also to communicate important aspects of self to others (Belk, 1988; Dittmar, 1992; Kleine et al., 1993; Richins, 1994). Applying this logic to the context of customization, this study posits that people consider a product they customize as their “extended self” and thus identify themselves with the customized product to a greater extent such that the customized product reflects and contributes to the sense of self.

Belk (1998) suggested three primary ways of incorporating objects into the extended self: control/mastery over the objects, intimate knowledge of the object, and creation. In regard to creation, he stated that “objects such as land to the farmer, handcrafted pieces to the craftsperson, and artworks to the artist may become a part of extended self” (p.151) because these are the outcomes of investing both energy and self

(Belk, 1988). In a similar vein, during customization, consumers invest their values, goals, time, and effort into the products from which they create their “extended self” (Atakan et al., 2014a; 2014b).

### Identity Theory

To gain an understanding of the symbolic meaning of the customer as creator of a customized product, this study draws on identity theory, which is a theory that defines self as a multifaceted entity “composed of the meanings that persons attach to the multiple roles they typically play in highly differentiated contemporary societies” (Stryker & Burke, 2000, p.284). In identity theory, the core of identity is *role-based identities* (Stets & Burke, 2000; Stryker & Burke, 2000). That is, people define a sense of self by developing individual meanings of a certain role and its expected performance and by incorporating these meanings into the self (Stets & Burke, 2000). During the customization process, a customer puts effort into the customization process to generate a desired product from which he/she may develop a new identity as a designer/creator.

In addition, identity theory explains how identities affect behavior and social structures (Stryker & Burke, 2000). The theory states that when an identity around a certain role is activated, the individual engages in a cognitive process in which he/she internalizes identity standards and norms in line with this identity (Burke, 1991; Burke & Reitzes, 1981; Burke & Stets, 1999). In the process, the person behaves in ways in which he/she can maintain consistency with the identity standard and norm. For example, a college student’s self-view of academic responsibility (one dimension of student identity) predicts the college plans which verify his/her self-view and does not predict attending a

social party which contradicts his/her self-view of academic responsibility (Stryker & Burke, 2000). In the context where a customer customizes a product, the customer's self-view as a designer or creator would lead him/her to act favorably to the customization experience so as to keep consistency with the standard of his/her designer role. This study examines identification with the customized product as a response to a customer's customization experience and defines it as a consumer's perception of how he/she sees him/herself as overlapping with the identity of the customized product.

Identity theory also explains the linkages of social structures with identities (Stryker, 1980; Stryker & Serpe, 1982). According to identity theory, people define a situation or social structure by the role positions in society that they occupy (Stryker, 1980; Stryker & Serpe, 1982). Situations, however, involve interactions with others. Thus, the extent to which people verify their identities is affected by their social interactions with others (Hogg, Terry, & White, 1995; Stryker & Burke, 2000). For example, satisfactory enactment of roles confirms and validates a person's identity salient in a particular situation, which, in turn, enhances feelings of self-esteem or self-worth. However, the perception that one is playing a role satisfactorily can be altered by feedback from others. When the feedback from others is incongruent with one's perception of one's role or internalized identity standards, distress may arise (Hogg et al., 1995; Stryker & Serpe, 1982). In the context of customization, consumers' identification with customized products would be affected not only by verifying the role of customized products but also by others' responses to customized products or a comparison of customized products to those of others.

## Hypotheses Development

### Consumer-Product Identification through Customization Experiences

Individuals hold a set of internal attributes such as preferences, attitudes, and beliefs (Fiske, Kitayama, Markus, & Nisbett, 1998). In today's consumer society, such internal attributes are reflected in consumers' product choices (Aaker & Schmitt, 2001; Belk, 1988; Malhotra, 1988; Richins, 1994). Levy (1959) noted symbolic meanings in consumption in which "people buy products not only for what they can do, but also for what they mean" (p. 118). The symbolic meaning imbued in a product includes consumers' identities. During purchase decisions, people construct and express their self-identities (Belk, 1998; Escalas & Bettman, 2003, 2005; Kleine et al., 1993) as well as their social identities (Muniz & O'Guinn, 2001), while also inferring aspects of others (Belk, Bahn, & Mayer, 1982; Kleine et al., 1993). For example, if a person considers him/herself as environment-friendly, the person may choose to drive a Toyota Prius to signify eco-friendly values and so signal his/her identity, that is, how much he/she cares about the environment (see also Maynard, 2007).

Customized products, vehicles for embedding important aspects of the self, allow consumers to more explicitly imbue symbolic meaning to products. As in "land to the farmer, handcrafted pieces to the craftsman, and artworks to the artist" (i.e., "extended self" Belk, 1988, p.151), customized products are objects in which consumers actively and volitionally invest their time, efforts, values, and preferences. Because all these investments in the customized product reflect aspects of the self (Mittal, 2006),

customized products symbolize consumers' identity as well as their relationship to the outside world (Ahuvia, 2005; Belk, 1988; Pierce et al., 2003).

Many researchers in marketing and consumer behavior have extended the symbolic meaning of consumption (Belk, 1988; Johar & Sirgy, 1991; Kleine et al., 1993) to mean the formation of consumer identification along with marketing objectives (products, brands, brand communities, and company) (e.g., Bagozzi & Dholakia, 2006; Bhattacharya & Sen, 2003). For example, drawing on theories of social identity and organizational identification, Bhattacharya and Sen (2003) defined a consumer's identification with the company as an "active, selective, and volitional act motivated by the satisfaction of one or more self-definitional needs" (i.e., "who am I?") (p.77). Researchers studying consumer-brand identification highlighted the role of brand in constructing and communicating consumer identity (e.g., Escalas & Bettman, 2003; 2005; Lam, Ahearne, Hu, & Schillewaert, 2010; Stokburger-Sauer et al., 2012). Extending this idea to the context of customization, researchers recently have focused on a consumer's identification with the customized product resulting from customization (e.g., Atakan et al., 2014a; 2014b; Miceli et al., 2013; Troye & Supphellen, 2012). That is, consumers identify with the customized product to a greater extent when they integrate themselves into the product and thus see themselves reflected in the product. Consistent with these studies, this study defines consumer-customized product identification as a consumer's perception of a customized product that is a symbolic representation of his/her identity.

## Cognitive and Affective Dimensions of Consumer-Customized Product Identification

This study further proposes consumer-customized product identification as multi-dimensional and entailing cognitive and affective dimensions (Wolter & Cronin, 2015).

First, the cognitive dimension of consumer-customized product identification indicates the degree to which consumers see themselves as overlapping with customized products' identity. Research on "extended self" (Belk 1988; Pierce et al., 2003) and identity theory (Burke, 1980; Burke & Reitzes, 1981; Stryker, 1968; 1980) posits that people are likely to engage in a behavior that confirms and verifies their identity in a given situation. Thus, products that help verify a sense of self are likely to be favorably evaluated (Bhattacharya & Sen, 2003; Currás-Pérez, Bigné-Alcañiz, & Alvarado-Herrera, 2009).

This psychological link between people and objects has been further developed in research on organizational identification. People define and maintain a sense of self by identifying with or categorizing themselves as members of an organization perceived to be consistent with their self-concept (Ashforth & Mael, 1989; Bergami & Bagozzi, 2000; Bhattacharya, Rao, & Glynn, 1995; Bhattacharya & Sen, 2003; Hogg & Terry, 2000). Although different terms have been used by other researchers (e.g., "a person's organizational identification," Bergami & Bagozzi, 2000; "conceptual overlap," Brown, Barry, Dacin, & Gunst, 2005), these terms converge on the notion that a cognitive state of identification occurs when there is a match between self-concept and another party's identity that answers self-definitional questions such as "who am I?" (Wolter & Cronin, 2015). Extending this logic to the context of self-production, recent researchers have focused on the concept of "identification with the product," which indicates "the degree



of perceived overlap between one's own current identity or self-image and the product's identity or image as one sees it" (Atakan et al., 2014b, p.453). This study focuses on "*a consumer's identification with a customized product*" and defines it as the consumer's cognitive perception of how he/she sees him/herself as overlapping with the identity or image of the customized product.

Second, the affective dimension of consumer–customized product identification concerns consumers' affect-laden responses to the customized product that arise during or immediately after the customization process. The literature on the person-object relationship and the "extended self" (Belk, 1988; Pierce et al., 2003) suggests the affective dimension of the relationship developed during the process of consumers' production participation. During the participation process in which consumers invest their time, efforts, values, and labor in the products, they tend to show emotional reactions to the customized products and further form feelings of attachment to the products that are considered to be the "extended self" (Belk, 1988; Kleine, Kleine, & Allen, 1995).

The affective dimension of how consumers relate to customized products is also supported by research on organizational identification (Tajfel, 1978; Tajfel & Turner, 1985; Wolter & Cronin, 2015). The affective dimension of organizational identification is described as a sense of belonging or feelings of emotional attachment to the organization (Allen & Meyer, 1990; Bergami & Bagozzi, 2000). The greater the sense of belonging to the organization, the greater one's affective response is to the organization. Atakan et al. (2014a) showed that the affective aspect of the consumer–customized product relationship occurs in a relatively short time during the self-production process (Park,

MacInnis, Priester, Eisingerich, & Iacobucci, 2010). Following Atakan et al (2014a), this study focuses on the “*affective aspect of consumer–customized product identification.*”

### Antecedents of Consumer-Customized Product Identification

Assuming that a consumer’s identification with a customized product influences the consumer’s responses to the customization process, a key question concerns the antecedents of consumer–customized product identification. Bhattacharya and Sen (2003) developed a conceptual framework that articulates the key antecedents of consumer identification. Antecedents include identity similarity, identity distinctiveness, and identity prestige. Given the context of this study, the current study focuses on two aspects of customization experiences which would develop consumer–customized product identification: identity distinctiveness and identity congruence. Table 2-1 provides definitions of relevant terms.

Table 2-1

#### Definition of terms.

<b>Terms</b>	<b>Definition</b>
Consumer–customized product identification	A consumer’s perception of customized product as a symbolic representation of his/her identity
Cognitive dimension of consumer–customized product identification	Consumers’ cognitive perception of how they see themselves as overlapping with the identity of the customized product
Affective dimension of consumer–customized product identification	Consumers’ affect laden responses to the customized products that arise shortly during or immediately after the customization process
Identity distinctiveness	The degree to which a customized product is unique and distinctive relative to other products
Identity congruence	A cognitive match or fit between the self-expressive value derived from customization processes and a consumer’s goal of self-expression.

### Identity Distinctiveness

Identity distinctiveness refers to the extent to which identity associated with customized product is perceived as unique or unusual. Research on “extended self” (Belk, 1988; Pierce et al., 2003) and identity theory (Burke, 1980; Burke & Reitzes, 1981; Stryker, 1968; 1980) posits that people’s behavior is affected by social interactions with others. That is, people’s attempt to maintain desired self-identities would be affected by the response of others to their identities. One way to resolve this attempt is by using products that are perceived to be distinct from others (Berger & Heath, 2007; 2008; Snyder & Fromkin, 1980; Tian, Bearden, & Hunter, 2001). Based on the notion that consumption has symbolic meaning as signals of one’s identity to others, researchers have shown that consumers use products to diverge from out-group members and thus to effectively signal their desired identities (Berger & Heath, 2007; 2008; White & Dahl, 2006). For example, Berger and Heath (2007) showed that people were likely to diverge from the majority to fulfill the need for differentiation but only in a product domain that was seen as symbolic of identity, such as music or hairstyle rather than backpacks or stereos. Therefore, distinctiveness is an important product characteristic from an identity signaling perspective.

The influence of distinctiveness on a consumer’s identification with marketing objectives has been supported in various consumer behavior contexts, including consumer–company relationships, consumer–brand relationships, target market advertising, and loyalty program (Bhattacharya & Sen, 2003; Grier & Deshpandé, 2001; Ha & Stoel, 2014; Kim, Han, & Park, 2001). For example, Kim et al. (2001) showed that

consumers who perceived brand personality to be distinctive were more likely to identify themselves with a brand. In practice, a number of retail/service companies offer customization options in an effort to provide distinctive experiences with their products or services (e.g., NikeiD, Heineken, and Expedia). For instance, Nike offers a custom design service, called NikeiD, where customers can customize their shoes, and customers of Heineken can customize beer bottles with their personal text and pictures. Such customization processes help consumers feel special, especially when consumers are allowed to insert personal text and pictures in products so that the customized product better represents who they are (Miceli et al., 2013; Pine & Gilmore, 1998).

In the context of customization, identity distinctiveness can be defined as the degree to which one perceives a customized product to be unique and distinctive relative to other products. This study predicts that when a product customized by a consumer appears to be distinctive and unique, the consumer will be more likely to identify him/herself with the customized product both cognitively and affectively.

*Hypothesis 1. Identity distinctiveness of a customized product will be positively related to cognitive consumer-customized product identification (H1a) and affective consumer-customized product identification (H1b).*

### Identity Congruence

Identity congruence is defined as a cognitive match or fit between the value derived from customization and the consumer identity goal. The two values focused on in this study are utilitarian value and self-expressive value. To date, the primary value of customized products has been attributed to increased preference fit (Dellaert & Stremersch, 2005; Franke & Piller, 2004; Franke et al., 2010; Merle et al., 2010;

Prahalad & Ramaswamy, 2004; von Hippel, 2001). By integrating preferences, goals, knowledge, and skills in the customization process, customers can better control the features of products that correspond to their preference system (Franke & Piller, 2004; Franke & Schreier, 2008; Franke et al., 2010; Merle et al., 2010; Prahalad & Ramaswamy, 2004).

Besides utilitarian value (i.e., preference fit), people seek psychological value by expressing their values and goals through customized products/experiences (Xie, Bagozzi, & Troye, 2008) such as self-expressive value (Campbell, 2005; Featherstone, 1987; Franke & Schreier, 2008; Franke et al., 2010; Merle et al., 2010). Franke et al (2010) also captured this psychological value from in-depth interviews and proposed the “I designed it myself” effect, which represents “the value increment a subject ascribes to a self-designed object, arising purely from the fact that she feels like the originator of that object” (Franke et al., 2010, p. 125). Interviewees reported positive feelings associated with the originator of the design (i.e., “I designed it myself”) in addition to preference fit as important motives for customization.

In a customization context, identity congruence is defined as a cognitive match or fit between the utilitarian (self-expressive value) benefit derived from customization and a consumer’s goal of maximizing preference fit (self-expression). This study predicts that when one’s customization experience enables one to satisfy one’s goal (motive) for maximizing preference fit as well as self-expression, this identity congruence will enhance one’s cognitive and affective identification with the product resulting from the customization.

*Hypothesis 2. Utilitarian identity congruence will be positively related to cognitive consumer-customized product identification (H2a) and affective consumer-customized product identification (H2b).*

*Hypothesis 3. Value-expressive identity congruence will be positively related to cognitive consumer-customized product identification (H3a) and affective consumer-customized product identification (H3b).*

### Relationships between Dimensions of Consumer-Customized Product Identification

Regarding the relationships between dimensions of C-C identification, prior researchers have identified the cognitive dimension as a precondition for developing the affective dimension (Bergami & Bagozzi, 2000; Carmeli, Gilat, & Weisberg, 2006; Einwiller, Fedorikhin, Johnson, & Kamins, 2006; Johnson, Morgeson, & Hekman, 2012; Van Dick, 2001; Van Dick, Wagner, Stellmacher, & Christ, 2004). The cognitive dimension of identification implies a cognitive perception of how a consumer sees him/herself as overlapping with the identity or image of the marketing objectives (e.g., customized products). The affective dimension of identification implies a sense of belonging or feelings of emotional attachment to the marketing objectives. Bergami & Bagozzi (2000) argued that a cognitive perception of overlapping provides a cognitive basis for acting favorably towards the marketing objectives, but a sense of belonging or feelings of emotional attachment provide the direct motivational force for doing so. In other words, affective identification is a direct determinant of attitudinal or behavioral consequences, while cognitive identification indirectly affects attitudinal/behavioral consequences through affective identification (Bergami & Bagozzi, 2000). Johnson et al (2012) were more explicit in examining the sequence of dimensions of identification. They showed that cognitive identification is a precondition for developing affective identification, but not vice versa.

Building upon prior research, this study predicts that a consumer's cognitive identification precedes his/her affective identification. In the context of customization, this study predicts that a cognitive perception of how a consumer sees him/herself as overlapping with the identity of the customized products positively influences a consumer's sense of belonging or feelings of emotional attachment to the customized products.

*Hypothesis 4. Cognitive consumer–customized product identification will positively influence affective consumer–customized product identification.*

#### Consequences of Consumer-Customized Product Identification

The marketing and organizational psychology literature widely agrees that a consumer's identification with a marketing objective leads to positive outcomes (Ahearne, Bhattacharya, & Gruen, 2005; Bergami & Bagozzi, 2000; Bhattacharya & Sen, 2003). When a consumer perceives that a marketing objective addresses an important aspect of the self, the consumer feels tied psychologically to the marketing objective (Belk, 1988; Kleine et al., 1995; Pierce et al., 2003), which induces favorable attitudinal and behavioral responses (Ahearne et al., 2005; Bhattacharya & Sen, 2003; Kressmann, et al., 2006). As noted by Ahearne et al (2005), "once a customer identifies with a company, purchasing that company's products becomes an act of self-expression" (p. 577). Therefore, consumers show favorable responses to the marketing objectives which validate and express consumer identity (Berger & Heath, 2007; 2008; Escalas & Bettman, 2003; 2005). Studies on consumer identity have demonstrated the positive impact of consumer identification on various outcomes, including product evaluation (Atakan et al.,

2014a; 2014b; Miceli et al., 2013; Troye & Supphellen, 2012), word-of-mouth (Ahearne et al., 2005; Algesheimer, Dholakia, & Herrmann, 2005; Kuenzel & Vaux Halliday, 2008), purchase intentions (Ahearne et al., 2005; Kuenzel & Vaux Halliday, 2008), and loyalty (Arnett, German, & Hunt, 2003; Bhattacharya & Sen, 2003).

Examining consumer responses to customized products that stem from a consumer's identification with the products, this study focuses on two relevant components: a consumer's attitude toward a customized product and satisfaction with the retailer of the product. First, attitude toward the customized product refers to a consumer's thoughts, beliefs, and/or judgments about a customized product (Breckler & Wiggins, 1989). When a consumer perceives a customized product as a reflection of him/herself and shows affect-laden responses to the customized product (i.e., consumer-customized product identification), favorable attitude toward the customized product will occur.

Second, a consumer's attitude toward customized products will further develop retailer-related reactions. In regard to consumer responses to the retailer, this study examines satisfaction with the retailer of the product, which refers to a consumer's contentment with respect to his/her experiences with the retailer (Oliver, 1997). In the context of customization, this study posits that consumer-customized product identification arising from customization experiences will be more likely to develop into satisfaction with the retailer offering such experiences.

*Hypothesis 5. Affective consumer-customized product identification will positively influence a consumer's attitude toward customized products (H5a) and satisfaction with the retailers (H5b).*



The relationships among consumer responses to the product and the retailer, such as product evaluation and satisfaction with the retailer have been studied extensively in the marketing literature (Bloemer & Lemmink, 1992; LaBarbera & Mazursky, 1983; Selnes, 1993; Sivadas & Baker-Prewitt, 2000). Oliver (1997) defined satisfaction as “the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer’s prior feelings about the consumption experience” (p. 28). In a similar line, Yi (1990) defined satisfaction as a cognitive and affective response to the consumption experience based on the discrepancy between prior expectation and the perception of current experience. In this study, satisfaction is defined as one’s contentment with respect to his/her customization experiences offered by a retailer. Past research suggests that a consumer’s attitude toward products or services offered by a retailer develops an overall attitude towards the retailer, which determines retailer satisfaction (LaBarbera & Mazursky, 1983; Selnes, 1993; Sivadas & Baker-Prewitt, 2000). Extending empirical evidence to the context of customization, this study posits that consumers’ attitude toward customized products positively influences their satisfaction with the retailer offering customization experiences.

*Hypothesis 6. A consumer’s attitude toward a customized product will positively influence his/her satisfaction with the retailer.*

#### Moderating Effect of Product Involvement

Involvement is defined in terms of perceived personal relevance attached to the acquisition, consumption, and disposition of a good, service, or idea (Celsi & Olson, 1988; Richins & Bloch, 1986). Personal relevance or interest in a product stems from a

consumer's perception that the product meets his/her values, goals, and self-concept (Bloch, 1982; Celsi & Olson, 1988; Mittal & Lee, 1989; Zaichkowsky, 1985). Therefore, involvement reflects how closely a product is linked to a person's self-concept (Celsi & Olson, 1988; Zaichkowsky, 1985). Such a perspective implies that involvement itself provides a way to express the sense of self (Bloch, 1982). Past research supports the benefits of involvement in boosting consumers' motivation to express their self-concept through product consumption (Mazodier & Merunka, 2014), brand consumption (Kressmann, Sirgy, Herrmann, Huber, Huber, & Lee, 2006; Sirgy, Lee, Johar, & Tidwell, 2008; Stokburger-Sauer et al., 2012), retail store patronage (Sirgy, Grewal, & Mangleburg, 2000), and word-of-mouth engagement (Taylor et al., 2012). Therefore, a level of involvement with the product influences consumers' willingness to express their identity through product consumption, which in turn influences the consumer-product relationship (Martin, 1998; Mittal, 2006).

The effect of product involvement on the person-object relationship has been well established in prior studies (Bloch, 1982; Mittal & Lee, 1989). First, in regard to the motivation to be unique or distinct from others, people choose products that help differentiate themselves from others and thus they effectively signal their desired identity (Berger & Heath, 2007; 2008; White & Dahl, 2006). Such motivation to express a unique and distinctive self-concept is better achieved through products with which consumers are highly involved (Stokburger-Sauer et al., 2012). Because high-involvement products provide better vehicles for expressing the self (Bloch, 1982; Martin, 1998; Mittal, 2006), a consumer's identification with a product that demonstrates a unique or distinctive identity is likely to be enhanced when he/she is highly involved with the product

category. In a similar vein, a consumer's identification with a product which derives values congruent with a consumer's identity goal would depend on the level of product involvement. That is, the impact of identity congruence on consumer-object identification is likely to be prominent when a consumer is highly involved with the product (Kressmann et al., 2006; Mazodier & Merunka, 2014; Taylor et al., 2012; Stokburger-Sauer et al., 2012).

Building upon prior research, this study predicts that a consumer's involvement level with a product influences his/her identification with the product. In the context of customization, this study predicts that a person's motivation to maintain a unique or distinct personal identity from others through a customized product is likely to be enhanced when he/she is highly involved with the product. This study also predicts that the effect of identity congruence of a customized product on consumer-customized product identification will be magnified when a consumer is highly involved with the product. Figure 2-1 presents the conceptual model and the hypotheses this study proposes.

*Hypothesis 7. The effect of identity distinctiveness on consumer–customized product identification (H7a: cognitive identification, H7b: affective identification) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.*

*Hypothesis 8. The effect of utilitarian identity congruence on consumer–customized product identification (H8a: cognitive identification, H8b: affective identification) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.*

*Hypothesis 9. The effect of value-expressive identity congruence on consumer–customized product identification (H9a: cognitive identification, H9b: affective identification) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.*

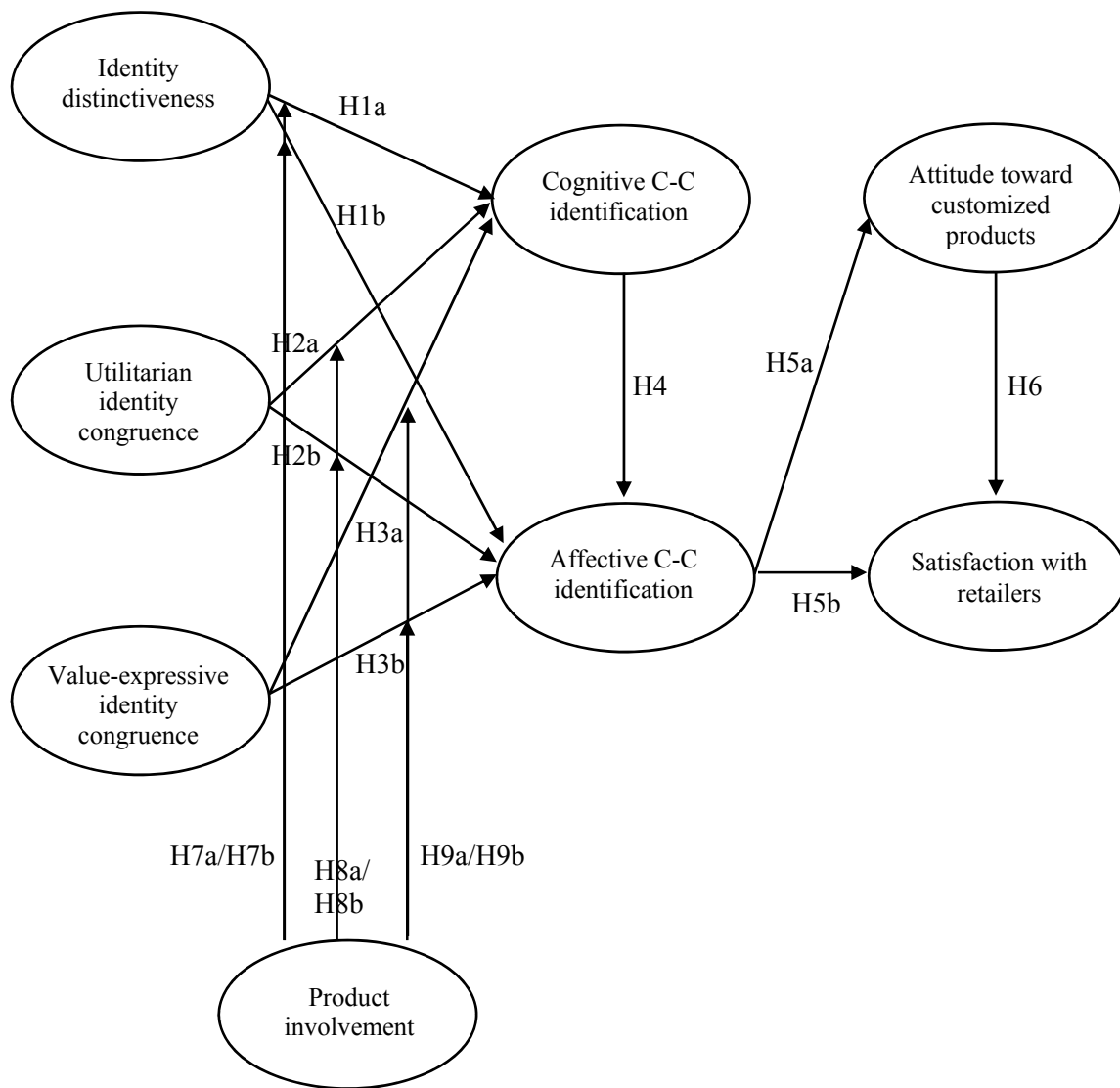


Figure 2-1. Research Framework (H1 – H9).

## CHAPTER 3 – METHODOLOGY

Chapter 3 describes the research methods used in this study. The chapter begins with a discussion of the questionnaire and measurement items used in the study and is followed by a discussion of the sample, data collection procedure, and data analyses.

### Questionnaire

The survey consists of four parts. Parts 1, 2, and 3 are designed to examine respondents' evaluations of their customization experiences with specific product categories. Part 4 is designed to examine respondents' general information, including their past online shopping experiences and demographic information.

In Parts 1, 2, and 3, each participant was asked to answer the same set of questions about specific product categories. The three product categories with the largest market share were selected. Walcher and Piller (2012) analyzed 500 companies which offered online customization experiences to consumers and provided an overview of the product categories dominant in the current market. According to Walcher and Piller's (2012) analysis, the three most dominant product categories in current customization markets were personalized media, personalized fashion & textiles, and food & nutrition. Personalized media refers to "flat prints on paper or near paper objects, such as canvas" (Walcher & Piller, 2012, p.7). Examples of personalized media include photo books, calendars, and cards. Personalized fashion & textiles refers to printed clothing or other

printed fabrics such as those used for shoes (Walcher & Piller, 2012, p.7). Personalized food and nutrition means food products with self-selected ingredients, flavor, size, and other features. This study selected these three product categories due to their market dominance.

Previous studies of online customization have used scenarios which explain the customization process to respondents (Lee & Chang, 2011; Lee, Damhorst, Campbell, Loker, & Parsons, 2011; Moon, Chadee, & Tikoo, 2008; Park, Han, & Park, 2013). This study also used a scenario-based survey where respondents were asked to answer questions based on certain scenarios. The scenarios depicted four sequential stages of online customization processes. For example, in the personalized fashion & textiles category, the first stage described the process of choosing a clothing style. The second stage entailed the detail selection step and the personalizing step. The detail selection step is the process of selecting details such as color and fabric, and the personalizing step is where personal images and texts can be added to the clothing/fashion products. The third stage was the process of choosing the size and quantity of the clothing/fashion products. The fourth stage was the review step in which the final customized products were shown.

### Measures

The measurements of all variables were adopted from previous studies. The survey contained a series of questions designed to tap five areas: (1) characteristics of customized products (identity distinctiveness, utilitarian identity congruence, and value-expressive identity congruence), (2) consumer–product identification through the customization experience (cognitive and affective dimensions), (3) consequences of

consumer–customized product identification (attitude toward customized products and satisfaction with the retailer), (4) individual characteristics (product involvement), and (5) general information, including respondents’ past online shopping experiences and demographic information. The questionnaire distributed to the participants is shown in Appendix A.

### Characteristics of Customized Products

This study measured two product characteristics: *identity distinctiveness* and *identity congruence*. Identity distinctiveness was measured using a three-item distinctiveness scale adopted from Dimofte, Forehand, and Deshpande (2003): “I would say the product that I customized ‘is distinctive,’ ‘is unusual,’ and ‘stands out from other customized products.’” *Utilitarian identity congruence* was measured on a 7-point Likert scale (1 = not at all similar; 7 = very similar) using three items adapted from Grewal, Mehta, and Kardes (2004). For example, “How similar is the value derived from customizing the product to the value derived from shopping for the products that meet my preferences and needs?” *Value-expressive identity congruence* was measured on a 7-point Likert scale (1 = not at all similar; 7 = very similar) using three items adapted from Grewal et al (2004). For example, “How similar is the goal that I associated with customizing the product to the goal of expressing myself through a product in general?”

### Consumer–customized Product Identification

This study measured the *cognitive and affective dimension* of consumer–customized product identification, both of which were measured on a 7-point Likert scale

(1 = strongly disagree; 7 = strongly agree) using a four-item scale adapted from Johnson, Morgeson, and Hekman (2012).

Table 3-1

Measures of Characteristics of Customized Product

<b>Constructs</b>	<b>Measurement items</b>	<b>Cronbach's <math>\alpha</math> (Sources)</b>
<i>Identity distinctiveness (DIST)</i>	I would say the product that I customized is distinctive.	.94 (Dimofte, Forehand, & Deshpande, 2003)
	I would say the product that I customized is unusual.	
	I would say the product that I customized stands out from others' customized products.	
<i>Utilitarian identity congruence (UTIL)</i>	How similar is the customized product to the product I initially had in mind?	.97 (Grewal, Mehta, & Kardes, 2004)
	How similar is the value derived from customizing the product to the value derived from shopping for the products that meet my preferences and needs?	
	To what extent would the customized product achieve the goal of making/designing the product I want?	
<i>Value-expressive identity congruence (EXP)</i>	How similar is the goal that I associated with customizing the product to the goal of expressing myself through a product in general?	.99 (Grewal et al., 2004)
	How similar is the value derived from customizing the product to self-expressive benefits of consuming a product in general?	
	To what extent would the customized product achieve the goal of expressing myself through a product in general?	



Table 3-2

Measures of Consumer–customized Product Identification

<b>Constructs</b>	<b>Measurement items</b>	<b>Cronbach's <math>\alpha</math> (Sources)</b>
<i>Cognitive C-C identification (CogCC)</i>	My identity is based in part on my relationships with the customized product.	.81 - .83 (Johnson et al., 2012)
	Being associated with the customized product helps me express my identity.	
	The customized product is part of my sense of who I am.	
	My sense of self overlaps with the identity of the customized product.	
<i>Affective C-C identification (AffCC)</i>	The things that the customized product stand for make me feel good to be connected with it.	.84 - .87 (Johnson et al., 2012)
	Generally, being associated with the customized product gives me a sense of pride.	
	Overall, I feel good when people associate me with the customized product.	
	I feel happy to be a creator of the customized product.	

## Consequences of Consumer–customized Product Identification

The study measured two consequences of consumer-customized product identification: *attitude toward the customized products* and *satisfaction with the retailer*. First, *attitude toward the customized products* was measured using four 7-point bipolar evaluative items (dislike/like, unpleasant/pleasant, unfavorable/favorable, negative/positive) adopted from prior studies (Atakan et al., 2014a; 2014b). Second, *satisfaction with the retailer* was measured using a five-item scale ranging from 1 (strongly disagree) to 7 (strongly agree) from Voss, Parasuraman, and Grewal (1998). For example, “I am happy with the customization experiences provided by this retailer.”

Table 3-3

Measures of Consequences of Consumer–customized Product Identification

<b>Constructs</b>	<b>Measurement items</b>	<b>Cronbach's <math>\alpha</math> (Sources)</b>
<i>Attitude toward the customized products (ATT)</i>	Dislike – like	.94 (Atakan et al., 2014a), .95 (Atakan et al., 2014b)
	Unpleasant – pleasant	
	Unfavorable – favorable	
	Negative – positive	
<i>Satisfaction with the retailer (SAT)</i>	I am delighted that this retailer offers customization experiences.	.83 (Voss, Parasuraman, & Grewal, 1998)
	I am satisfied with the manner in which this retailer offers customization experiences.	
	I am happy with the customization experiences provided by this retailer.	
	Overall, I am satisfied with this retailer's offering customization experiences.	
	Based on your customization experiences, how would you rate your satisfaction with this retailer?	

**Product Involvement**

*Product involvement* was assessed on a 7-point Likert Scale (1 = strongly disagree; 7 = strongly agree) using six items adopted from prior studies (Bauer, Sauer, & Becker, 2006; Helmig, Huber, & Leeflang, 2007; Mazodier & Merunka, 2014). For example, “I’m very interested in [product category of the customized product] in general.”

**Procedure and Sample**

A web-based survey was administered to test the proposed hypotheses. In order to recruit subjects from general consumers, potential participants were recruited from Amazon’s Mechanical Turk over 48 hours. Mechanical Turk, a cloud computing service, is

Table 3-4

*Measures of Product Involvement*

<b>Constructs</b>	<b>Measurement items</b>	<b>Cronbach's <math>\alpha</math> (Sources)</b>
<i>Product involvement (PINV)</i>	I'm very interested in [product category of the customized product] in general.	.83 (Bauer, Sauer, & Becker, 2006); .93 (Helmig, Huber, & Leeftang, 2007)
	[Product category of the customized product] is very important to me.	
	I'm very enthusiastic about [product category of the customized product].	
	[Product category of the customized product] is relevant to me.	
	[Product category of the customized product] does not matter to me.	

considered to be a viable data collection vehicle for conducting research in psychology and other social sciences (Barone & Jewell, 2013; Buhrmester, Kwang, & Gosling, 2011; Mason & Suri, 2012; Parker & Lehmann, 2011). Buhrmester et al. (2011) demonstrated that Mechanical Turk samples were more demographically diverse than traditional Internet samples or typical US college student samples. More importantly, Mechanical Turk samples met or exceeded psychometric standards (e.g., test-retest reliabilities) (Buhrmester et al., 2011).

Only participants who had an approval rate of 95% or higher were asked to participate. Respondents were requested to complete a survey based on scenarios with specific product categories (i.e., personalized media, personalized fashion & textiles, and food & nutrition). Before starting the survey, respondents were asked to recall their own past experiences, if they had any, with the product categories described in the scenarios. Of the 1,006 completed surveys returned, 9 respondents with the same internet protocol

(IP) address were deleted. This study further identified 10 respondents that had values greater than 15% of the total number of questions missing, so these respondents were eliminated from the analysis (Hair, Celsi, Money, Samouel, & Page, 2003). A usable sample of 987 remained after the screening process.

### Analysis

First, a preliminary analysis was conducted to check if the data violated underlying assumptions of Structural Equation Modeling (normality, outliers, missing data, and multicollinearity). Unidimensionality and reliability checks for the constructs and a test for response bias were also conducted. Second, confirmatory factor analysis was done to estimate a measurement model following Anderson and Gerbing's (1988) two-step approach. Next, structural equation modeling (SEM) was performed to examine the proposed structural model. Finally, multiple group analysis was conducted to examine the moderating effects of product involvement.

### Confirmatory Factor Analysis

General structural equation models consist of two parts: a measurement model and a structural model. The measurement model specifies relationships between latent variables and their observed variables, while the structural model specifies relationships among latent variables. Following Anderson and Gerbing's (1988) two-step approach, a measurement model was assessed before examining the structural model. The measurement model is theory-driven and as such, describes or explains the relationships between latent variables and their observed variables. Confirmatory factory analysis (CFA) was conducted to examine whether the data fit the proposed measurement model;

that is, whether the observed variables represented the latent variables well and whether the overall fit of the measurement model was satisfactory for testing the proposed structural model (Anderson and Gerbing, 1988). To further verify the model fit, additional measurement properties including convergent validity, discriminant validity, and composite reliabilities were also assessed.

A number of fit statistics were used to assess the goodness-of-fit of the model. For example, Chi-square ( $\chi^2$ ) to degrees of freedom fit ( $\chi^2/df$ ) statistics, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Tucker Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA) were used (Hu & Bentler, 1999).  $\chi^2/df$  values below 3 represent perfect model fit and below 5 represent acceptable model fit (Hu & Bentler, 1999). Although the  $\chi^2/df$  statistics have been criticized for being highly influenced by sample size (Brown, 2006), they are widely used in conjunction with other supplementary fit indices as below.

Of all the fit indices, the Confirmatory Fit Index (CFI) is considered to be the most reliable and recommended index (Bentler, 1990). CFI values range from 0 to 1. The closer the value to 1, the better the model fit. CFI values above .9 indicate satisfactory model fit (Brown, 2006; Hu & Bentler, 1999). Similar to CFI, values for GFI, NFI, TLI, and IFI above .9 also indicate satisfactory model fit (Brown, 2006; Bentler, 1992; Hu & Bentler, 1999). RMSEA values equal to or below 0.06 suggest adequate fit (Hu & Bentler, 1999). However, MacCallum, Browne, and Sugawara (1996) suggest 0.08 as the cut-off value for determining good model fit because RMSEA values are highly affected by sample size.

## Structural Equation Modeling

Following Anderson and Gerbing's (1988) two-step approach, the proposed structural model was examined after making sure that the measurement model fit the data well. Through conducting structural equation modeling (SEM), the hypothesized relationships among identity distinctiveness, identity congruence, consumer-customized product identification, attitude toward customized products, and satisfaction with the retailers were examined. The main advantage of conducting SEM is to estimate "a series of separate, but interdependent, multiple regression equations simultaneously" (Hair et al., 2006, p. 584). Additionally, the proposed structural model was compared with a rival model, which added a direct path from cognitive identification to behavioral outcomes (Wolter & Cronin, 2015).

Using guidelines set by Hu and Bentler (1999), the model fit was assessed using Chi-square ( $\chi^2$ ) to degrees of freedom fit ( $\chi^2/df$ ) statistics, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Tucker Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA).

## Moderation Analysis

In order to examine the moderating effect of product involvement, multiple group analysis was conducted. Multiple group analysis is to identify "whether or not components of the measurement model or the structural model are invariant across different groups" (Byrne, 2001, p. 173). To make valid multigroup comparisons, it is necessary to establish invariance for measurement instruments across groups (Steenkamp & Baumgartner, 1998). Following the hierarchical procedure proposed by Steenkamp and

Baumgartner (1998), this study assessed measurement invariance across groups. Next, to examine whether the structural models were invariant across groups, chi-square difference was examined between 1) the constrained model, in which the path coefficients for the relationships among variables were constrained to be equal across groups, and 2) the unconstrained model, in which all path coefficients in each group were allowed to be freely estimated. Using guidelines set by Hu and Bentler (1999), the model fit was assessed using Chi-square ( $\chi^2$ ) to degrees of freedom fit ( $\chi^2/df$ ) statistics, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Tucker Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). Additionally, in order to investigate paths that show significant differences across two groups, each path was examined separately using the chi-square difference between the constrained model and the unconstrained model.

## CHAPTER 4 – ANALYSIS AND RESULTS

Chapter four begins with a discussion on the respondents' descriptive statistics. The discussion is followed by results of preliminary analyses (i.e., exploratory factor analysis, underlying assumptions of Structural Equation Modeling, test for response bias). Then, results of the measurement model and the proposed hypotheses are presented.

### Descriptive Statistics

The sample characteristics are presented in Table 4-1. 46.9 percent of the respondents are male and 53.0 percent of the respondents are female. Majority of the respondents are from the U.S. (84.4%) and are Caucasian (69.8%). With regard to age, respondents are relatively young. The average age of the respondents is 34.3 years old and more than half of the respondents (63.6%) are under the age of 35. Respondents are also relatively well-educated with the majority of the respondents (89.7%) having some college/University or higher degrees. This young and well-educated sample is expected based on the nature of recent online shopper's demographics (Lee & Chang, 2011; Lee et al., 2011; Park et al., 2013). More than half of the respondents (54.6%) have \$40,000 or more annual household income.



Table 4-1

Sample Demographics (N=987)

<b>Demographics</b>		<b>Mean</b>	<b>s.d.</b>
Age		34.33	10.32
		<b>Frequency</b>	<b>Percent (%)</b>
Age	18 – 25	187	18.9
	26 – 35	441	44.7
	36 – 45	214	21.7
	46 – 55	85	8.6
	55 – 65	39	4.0
	65 or more	12	1.2
	No answer	9	0.9
Gender	Male	463	46.9
	Female	523	53.0
	No answer	1	0.1
Ethnicity	Caucasian	689	69.8
	African	56	5.7
	Native American	11	1.1
	Asians	164	16.6
	Pacific Islanders	2	0.2
	Latino	40	4.1
	Multiple-racial	19	1.9
	Other	4	0.4
	No answer	2	0.2
Countries	U.S	833	84.4
	India	128	13.0
	Europe	15	1.5
	Latin America	3	0.3
	Asia	6	0.6
	No answer	2	0.2
Education	Less than high school	2	0.2
	High school/GED	91	9.2
	Some college/University	298	30.2
	Bachelor's Degree	420	42.6
	Master's Degree	150	15.2
	Doctoral Degree	17	1.7
	Other	7	0.7
	No answer	2	0.2

Table 4-1, continued

<b>Demographics</b>		<b>Mean</b>	<b>s.d.</b>
Age		34.33	10.32
		<b>Frequency</b>	<b>Percent (%)</b>
Annual Household Income	Less than \$20,000	149	15.1
	\$20,000 - \$29,999	145	14.7
	\$30,000 - \$39,999	152	15.4
	\$40,000 - \$49,999	111	11.2
	\$50,000 - \$59,999	100	10.1
	\$60,000 - \$69,999	76	7.7
	\$70,000 - \$79,999	76	7.7
	\$80,000 - \$89,999	44	4.5
	\$90,000 - \$99,999	31	3.1
	\$100,000 or more	102	10.3
No answer		1	0.1

Prior online shopping experiences of the respondents are presented in Table 4-2. More than half of the respondents (54.9%) indicate they spend at least 2 hours on online shopping every week. In personalized media category, about 34 percent of the sample has prior experience of customizing photo books. In personalized fashion and textiles category, more than half of the respondents (50.6%) have prior experience of customizing t-shirts. In food and nutrition category, about half of the respondents (46.1%) have prior experience of customizing birthday cakes.

### Preliminary Analysis and Data Screening

#### Missing Data

This study imputed missing data using Expectation-Maximization (EM) algorithm imputation method. Overall, only 0.001% of items were missing from the dataset. A

Table 4-2

Online Shopping Experience (N=987)

Variable		Frequency	Percent (%)	
Hours spent on Online Shopping per Week	Less than 1 hour	410	41.5	
	1 – 2 hours	10	1.0	
	2 – 3 hours	239	24.2	
	3 – 4 hours	85	8.6	
	4 – 5 hours	69	7.0	
	5 – 10 hours	98	9.9	
	10 – 20 hours	40	4.1	
	20 hours or more	11	1.1	
	No answer	26	2.6	
Personalized Media Category	Product category of online customization experiences	Calendars	138	14.0
		Photo books	339	34.3
		Cards	241	24.4
		None of the above	268	27.2
		No answer	1	0.1
	Online customization experiences	Within last 6 months	216	21.9
		Within last 1 year	205	20.8
		More than a year ago	314	31.8
		No answer	252	25.5
Personalized Fashion and Textiles Category	Product category of online customization experiences	t-shirts	499	50.6
		Shoes	35	3.5
		Other fashion products	93	9.4
		None of the above	360	36.5
	Online customization experiences	Within last 6 months	147	14.9
		Within last 1 year	158	16.0
		More than a year ago	351	35.6
		No answer	331	33.5

Table 4-2, continued

Variable		Frequency	Percent (%)	
Food and Nutrition Category	Product category of online customization experiences	Wedding cake	66	6.7
		Birthday cake	455	46.1
		Drinks	44	4.5
		Other food products	62	6.3
		None of the above	360	36.5
	Online customization experiences	Within last 6 months	263	26.6
		Within last 1 year	157	15.9
		More than a year ago	247	25.0
		No answer	320	32.4

non-significant Little's MCAR test,  $\chi^2(4196) = 3594.84, p = 1.00$ , revealed that the data were missing completely at random (Little, 1988). When data are missing completely at random and only a very small portion of data are missing (e.g. less than 5% total responses), Expectation-Maximization (EM) algorithm imputation method finds unbiased parameter estimates and increases statistical power of analyses (Enders, 2001). Therefore, this study imputed missing values using the EM method with SPSS 20.0. The EM method is also considered to provide a better approach than other missing value imputation methods such as listwise, pairwise, and mean substitution (Roth, 1994).

#### Unidimensionality and Reliabilities

In order to examine unidimensionality of all constructs, an exploratory factor analysis was performed with the indicators of all constructs in the study. The maximum likelihood extraction method, along with the direct oblimin rotation in SPSS 20.0 was applied. The results of unidimensionality checks demonstrated that *utilitarian identity*

*congruence* and *value-expressive identity congruence* were loaded under the same dimension. Therefore, these two constructs were combined into one construct named as “*identity congruence*.” Research hypotheses were also revised accordingly, as provided in Table 4-3.

Table 4-3

Original and Revised Hypotheses

<b>Original hypotheses</b>	<b>Revised hypotheses</b>
<i>Hypothesis 1.</i> Identity distinctiveness of a customized product will be positively related to cognitive C-C identification (H1a) and affective C-C identification (H1b).	<i>Hypothesis 1.</i> Identity distinctiveness of a customized product will be positively related to cognitive C-C identification (H1a) and affective C-C identification (H1b).
<i>Hypothesis 2.</i> Utilitarian identity congruence will be positively related to cognitive C-C identification (H2a) and affective C-C identification (H2b).	<i>Hypothesis 2.</i> Identity congruence of a customized product will be positively related to cognitive C-C identification (H2a) and affective C-C identification (H2b).
<i>Hypothesis 3.</i> Value-expressive identity congruence will be positively related to cognitive C-C identification (H3a) and affective C-C identification (H3b).	
<i>Hypothesis 4.</i> Cognitive C-C identification will positively influence affective C-C identification.	<i>Hypothesis 3.</i> Cognitive C-C identification will positively influence affective C-C identification.
<i>Hypothesis 5.</i> Affective C-C identification will positively influence a consumer’s attitude toward customized products (H5a) and satisfaction with the retailers (H5b).	<i>Hypothesis 4.</i> Affective C-C identification will positively influence a consumer’s attitude toward customized products (H4a) and satisfaction with the retailers (H4b).
<i>Hypothesis 6.</i> A consumer’s attitude toward a customized product will positively influence his/her satisfaction with the retailer.	<i>Hypothesis 5.</i> A consumer’s attitude toward a customized product will positively influence his/her satisfaction with the retailer.
<i>Hypothesis 7.</i> The effect of identity distinctiveness on C-C identification (H7a: cognitive, H7b: affective) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.	<i>Hypothesis 6.</i> The effect of identity distinctiveness on C-C identification (H6a: cognitive, H6b: affective) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.

Table 4-3, continued

<b>Original hypotheses</b>	<b>Revised hypotheses</b>
<i>Hypothesis 8.</i> The effect of utilitarian identity congruence on C-C identification (H8a: cognitive, H8b: affective) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.	<i>Hypothesis 7.</i> The effect of identity congruence on C-C identification (H7a: cognitive, H7b: affective) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.
<i>Hypothesis 9.</i> The effect of value-expressive identity congruence on C-C identification (H9a: cognitive, H9b: affective) is likely to be prominent when a consumer is high in product involvement as opposed to low in product involvement.	

The following analyses are performed with the seven constructs which are identity distinctiveness, *identity congruence*, cognitive C-C identification, affective C-C identification, attitude toward the customized products, satisfaction with the retailer, and product involvement. To test unidimensionality and reliabilities of constructs, this study performed analyses by each product category. First was about the personalized media category. A total of four items were removed. In specific, due to the low communality (<.4), three items (CON1, CON2, CON5) from identity congruence and one item (PINV5R) from product involvement were excluded (Hair et al., 2006). The remaining items displayed in Table 4-4 exhibit adequate reliabilities (Cronbach's  $\alpha > .7$ ), the item-total correlations within each construct (>.5), and the proportion of variance explained by the items (>.5) (Bearden & Netemeyer, 1998; Churchill, 1979; Nunnally, 1978). Thus, the unidimensionality and the internal consistency of all variables in personalized media category were confirmed.

Table 4-4

Unidimensionality and Reliability – Media Category

<b>Construct /Items</b>	<b>Factor loading</b>	<b>Item-total correlation</b>	<b>% variance explained</b>	<b>Cronbach's <math>\alpha</math></b>
Identity distinctiveness			52.58	.74
DIST1	.67	.56		
DIST2	.59	.52		
DIST3	.88	.66		
Identity congruence			52.39	.76
CON1	—	—		
CON2	—	—		
CON3	.75	.61		
CON4	.63	.54		
CON5	—	—		
CON6	.78	.63		
Cognitive C-C identification			77.69	.93
CogCC1	.87	.84		
CogCC2	.83	.80		
CogCC3	.93	.88		
CogCC4	.89	.85		
Affective C-C identification			70.92	.91
AffCC1	.81	.77		
AffCC2	.87	.82		
AffCC3	.87	.81		
AffCC4	.81	.77		
Attitude toward the customized products			82.91	.95
ATT1	.89	.87		
ATT2	.90	.87		
ATT3	.93	.89		
ATT4	.92	.89		
Satisfaction with the retailer			72.61	.93
SAT1	.78	.76		
SAT2	.88	.83		
SAT3	.89	.84		
SAT4	.90	.85		
SAT5	.81	.78		

Table 4-4, continued

<b>Construct /Items</b>	<b>Factor loading</b>	<b>Item-total correlation</b>	<b>% variance explained</b>	<b>Cronbach's <math>\alpha</math></b>
Product involvement			86.48	.95
PINV1	.93	.87		
PINV2	.94	.89		
PINV3	.95	.91		
PINV4	.91	.84		
PINV5 R	—	—		

Second was tested for fashion & textiles category. Due to the low communality (<.3), one item (PINV5R) from product involvement were excluded (Hair et al., 2006). The remaining items displayed in Table 4-5 exhibit adequate reliabilities (Cronbach's  $\alpha > .7$ ), the item-total correlations within each construct (>.5), and the proportion of variance explained by the items (>.5) (Bearden & Netemeyer, 1998; Churchill, 1979; Nunnally, 1978). Thus, the unidimensionality and the internal consistency of all variables in fashion & textiles category were confirmed.

The last was for food category. Due to the low communality (<.3), one item (PINV5R) from product involvement were excluded (Hair et al., 2006). The remaining items displayed in Table 4-6 exhibit adequate reliabilities (Cronbach's  $\alpha > .7$ ), the item-total correlations within each construct (>.5), and the proportion of variance explained by the items (>.5) (Bearden & Netemeyer, 1998; Churchill, 1979; Nunnally, 1978). Thus, the unidimensionality and the internal consistency of all variables concerning food category were confirmed.



Table 4-5

Unidimensionality and Reliability – Fashion & Textiles Category

<b>Construct /Items</b>	<b>Factor loading</b>	<b>Item-total correlation</b>	<b>% variance explained</b>	<b>Cronbach's <math>\alpha</math></b>
Identity distinctiveness			68.57	.85
DIST1	.80	.72		
DIST2	.68	.64		
DIST3	.97	.82		
Identity congruence			64.52	.92
CON1	.72	.71		
CON2	.75	.73		
CON3	.81	.77		
CON4	.88	.83		
CON5	.83	.78		
CON6	.81	.76		
Cognitive C-C identification			80.37	.94
CogCC1	.88	.85		
CogCC2	.83	.80		
CogCC3	.94	.90		
CogCC4	.93	.89		
Affective C-C identification			80.78	.94
AffCC1	.89	.87		
AffCC2	.90	.87		
AffCC3	.94	.90		
AffCC4	.85	.82		
Attitude toward the customized products			88.93	.97
ATT1	.94	.92		
ATT2	.93	.91		
ATT3	.95	.93		
ATT4	.95	.93		
Satisfaction with the retailer			82.10	.96
SAT1	.84	.83		
SAT2	.91	.89		
SAT3	.94	.91		
SAT4	.95	.92		
SAT5	.89	.87		

Table 4-5, continued

<b>Construct /Items</b>	<b>Factor loading</b>	<b>Item-total correlation</b>	<b>% variance explained</b>	<b>Cronbach's <math>\alpha</math></b>
Product involvement			81.82	.95
PINV1	.93	.90		
PINV2	.94	.91		
PINV3	.93	.89		
PINV4	.81	.79		
PINV5 R	—	—		

Table 4-6

## Unidimensionality and Reliability – Food Category

<b>Construct /Items</b>	<b>Factor loading</b>	<b>Item-total correlation</b>	<b>% variance explained</b>	<b>Cronbach's <math>\alpha</math></b>
Identity distinctiveness			72.06	.88
DIST1	.82	.75		
DIST2	.73	.70		
DIST3	.98	.84		
Identity congruence			62.31	.91
CON1	.71	.70		
CON2	.75	.73		
CON3	.76	.74		
CON4	.86	.79		
CON5	.85	.78		
CON6	.80	.74		
Cognitive C-C identification			86.70	.96
CogCC1	.92	.90		
CogCC2	.90	.89		
CogCC3	.97	.94		
CogCC4	.93	.91		
Affective C-C identification			80.05	.94
AffCC1	.89	.86		
AffCC2	.92	.88		
AffCC3	.94	.90		
AffCC4	.82	.80		

Table 4-6, continued

<b>Construct /Items</b>	<b>Factor loading</b>	<b>Item-total correlation</b>	<b>% variance explained</b>	<b>Cronbach's <math>\alpha</math></b>
Attitude toward the customized products			88.97	.97
ATT1	.94	.92		
ATT2	.94	.92		
ATT3	.96	.94		
ATT4	.94	.92		
Satisfaction with the retailer			83.32	.96
SAT1	.85	.84		
SAT2	.92	.90		
SAT3	.93	.90		
SAT4	.94	.92		
SAT5	.92	.89		
Product involvement			79.34	.94
PINV1	.91	.87		
PINV2	.92	.88		
PINV3	.88	.85		
PINV4	.85	.81		
PINV5 R	—	—		

#### Normality Assumption and Outliers

To ensure multivariate normality, tests verifying normal univariate distribution were conducted using normality indices of skewness and kurtosis. Variables with absolute values of skewness and kurtosis exceeding 3 and 10, respectively indicate a normality problem (Kline, 1998). As indicated in Table 4-7, none of the variables were found to have significant skewness (>3) or kurtosis (>10) issues. Therefore, the assumption of normality was not violated in this study.

Table 4-7

## Distributions of Latent Variables (N = 987)

<b>Construct/Items</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Skewness</b>	<b>Kurtosis</b>
<b>Identity distinctiveness</b>				
DIST1	5.52/5.34/5.07	1.16/1.33/1.42	-1.25/-0.95/-0.69	2.23/0.89/0.07
DIST2	4.30/4.65/4.38	1.51/1.58/1.63	-0.17/-0.42/-0.15	-0.76/-0.60/-0.80
DIST3	4.96/5.11/4.79	1.31/1.42/1.51	-0.52/-0.65/-0.43	-0.04/0.06/-0.43
<b>Identity congruence</b>				
CON1	— /5.31/5.35	— /1.37/1.41	— /-0.88/-0.86	— /0.79/0.55
CON2	— /5.11/5.16	— /1.45/1.44	— /-0.74/-0.73	— /0.24/0.23
CON3	5.64/5.43/5.32	1.15/1.36/1.41	-0.99/-1.02/-0.85	1.19/1.20/0.50
CON4	5.32/5.26/5.06	1.27/1.45/1.49	-0.86/-0.98/-0.73	0.78/0.81/0.10
CON5	— /5.14/5.00	— /1.47/1.48	— /-0.78/-0.64	— /0.30/-0.02
CON6	5.57/5.32/5.10	1.16/1.40/1.50	-0.88/-0.93/-0.72	1.03/0.93/0.17
<b>Cognitive C-C identification</b>				
CogCC1	3.96/4.14/3.72	1.68/1.72/1.74	-0.19/-0.26/0.08	-1.02/-0.94/-1.04
CogCC2	4.53/4.65/4.01	1.61/1.61/1.73	-0.61/-0.64/-0.19	-0.43/-0.42/-0.94
CogCC3	4.10/4.28/3.74	1.70/1.69/1.78	-0.29/-0.35/0.06	-0.95/-0.79/-1.00
CogCC4	4.12/4.24/3.76	1.66/1.69/1.76	-0.31/-0.32/0.02	-0.83/-0.80/-1.01
<b>Affective C-C identification</b>				
AffCC1	5.32/4.97/4.61	1.23/1.39/1.48	-1.08/-0.84/-0.60	1.64/0.52/-0.09
AffCC2	5.20/4.90/4.51	1.32/1.47/1.56	-1.00/-0.76/-0.43	1.16/0.27/-0.41
AffCC3	5.24/4.99/4.57	1.31/1.43/1.53	-1.02/-0.81/-0.51	1.34/0.48/-0.23
AffCC4	5.66/5.31/4.99	1.14/1.40/1.45	-1.27/-1.06/-0.80	2.71/1.14/0.45
<b>Attitude toward products</b>				
ATT1	6.12/5.86/5.73	0.99/1.24/1.26	-1.39/-1.09/-0.82	2.91/1.05/-0.20
ATT2	6.09/5.82/5.71	1.03/1.23/1.26	-1.44/-1.07/-0.79	2.90/1.05/-0.11
ATT3	6.13/5.86/5.74	1.03/1.23/1.27	-1.48/-1.05/-0.87	3.24/0.88/0.31
ATT4	6.18/5.91/5.79	1.02/1.22/1.25	-1.67/-1.12/-0.91	4.11/1.03/0.42

Table 4-7, continued

<b>Construct/Items</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Skewness</b>	<b>Kurtosis</b>
Satisfaction with the retailer				
SAT1	5.81/5.61/5.45	1.04/1.17/1.16	-1.27/-0.95/-0.67	2.54/1.02/0.39
SAT2	5.81/5.58/5.47	0.94/1.15/1.18	-1.08/-0.97/-0.75	1.87/1.23/0.53
SAT3	5.83/5.55/5.48	0.93/1.15/1.17	-1.01/-0.86/-0.75	1.57/0.87/0.51
SAT4	5.90/5.62/5.52	0.94/1.16/1.18	-1.00/-0.93/-0.81	1.40/1.09/0.74
SAT5	5.90/5.63/5.55	0.91/1.11/1.16	-1.09/-0.78/-0.75	1.51/0.41/0.49
Product involvement				
PINV1	4.83/5.14/5.39	1.50/1.53/1.33	-0.65/-0.81/-1.04	-0.21/-0.05/0.94
PINV2	4.49/4.99/5.35	1.62/1.61/1.35	-0.36/-0.66/-0.98	-0.70/-0.38/0.82
PINV3	4.55/4.85/5.17	1.61/1.64/1.47	-0.40/-0.57/-0.78	-0.64/-0.54/0.07
PINV4	4.90/5.33/5.51	1.52/1.45/1.30	-0.75/-0.98/-1.09	-0.00/0.53/1.23
PINV5 R	—	—	—	—

Note. All numbers are in order of personalized media, fashion & textiles, and food category.

### Test for Response Bias

Next, the Harman's single factor test was conducted to control for the effect of common method variance (CMV) (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). CMV is defined as "the variance that is attributable to the measurement method rather than to the construct of interest" (Bagozzi & Yi, 1991, p. 426). The purpose of testing for common method variance is to estimate the extent to which the data may be affected by biases caused by the measurement method. The seven constructs (identity distinctiveness, identity congruence, cognitive C-C identification, affective C-C identification, attitude toward the customized products, satisfaction with the retailer, and product involvement) were analyzed using an unrotated principal component factor analysis. According to Podsakoff et al (2003), the unrotated factor solution displaying a single factor indicates a flawed and biased measurement model. However, in this case, the results indicated four (fashion & textiles category) or five (personalized media and food category) factors, thus demonstrating a lack of CMV.

### Multicollinearity

Lastly, correlation analysis showed that some of the variables have significant correlations. Accordingly, this study assessed multicollinearity using Tolerance and Variance Inflation Factor (VIF). Computationally, Tolerance is the reciprocal of VIF. The VIF value greater than 10 or Tolerance value below .1 is considered to be problematic (Bowerman & O'Connell, 1990). None of the variables were found to have significant VIF (>10) or Tolerance (<.1). Thus, the assumption of multicollinearity was not violated in this study.

### Confirmatory Factor Analysis

To provide a more rigorous test of the hypothesized measurement model, this study employed a cross-validation method using confirmatory factor analysis (CFA). Cross-validation involves an independent test of the proposed measurement model with two sub-samples. Two sub-samples randomly selected from the total samples are: 1) calibration sample, which is to assess the measurement model and 2) validation sample, which is to determine the predictive effectiveness of that model (Browne & Cudeck, 1989; Cudeck & Browne, 1983). The proposed model can be modified based on its model fit, but the modification performed in a single sample entails the danger of capitalizing on chance. That is, the idiosyncrasies of a particular sample may lead to revisions of the proposed measurement model that cannot be generalized with different sample (MacCallum, Roznowski, & Necowitz, 1992; Steenkamp & Baumgartner, 1998). To address this problem, cross-validation method is highly recommended (MacCallum et al., 1992; Steenkamp & Baumgartner, 1998).

### CFA Results of Media Category

The total sample of 987 responses was randomly divided into two subsamples: 1) calibration sample ( $N = 516$ ), which is to assess the measurement model and 2) validation sample ( $N = 504$ ), which is to determine the predictive effectiveness of that model. For the measurement baseline model, DIST2 and CON4 were deleted due to their low squared multiple correlation estimates (SMC) ( $<.4$ ) (Bagozzi & Yi, 1988). The respecification process left the measurement model with a good fit,  $\chi^2(254) = 602.268$ ,  $\chi^2$

$/df = 2.371$ , CFI = .970, IFI = .970, TLI = .965, RMSEA = .052 [90% RMSEA CI = .046; .057].

As a cross-validation method, the measurement model was validated using validation sample ( $N = 504$ ). The fit indices of the model showed a good fit,  $\chi^2 (254) = 589.996$ ,  $\chi^2 / df = 2.323$ , CFI = .970, IFI = .970, TLI = .965, RMSEA = .051 [90% RMSEA CI = .046; .057]. The factor loadings and the correlations among the latent variables were very similar to those of the calibration sample. Thus, it was concluded that the proposed measurement model predicts the overall data well. The factor loadings and goodness-of-fit statistics of the model are summarized in Table 4-8.

Table 4-8

CFA Results of Media Category across Calibration and Validation Samples

Variables	Calibration sample ( $N = 516$ )			Validation sample ( $N = 504$ )		
	Factor loading	CR <sup>a</sup>	AVE	Factor loading	CR <sup>a</sup>	AVE
Identity distinctiveness		.74	.59		.75	.60
DIST1	.83			.80		
DIST2	—			—		
DIST3	.69			.75		
Identity congruence		.76	.61		.74	.58
CON1	—			—		
CON2	—			—		
CON3	.81			.79		
CON4	—			—		
CON5	—			—		
CON6	.76			.73		
Cognitive C-C		.94	.79		.93	.77
CogCC1	.88			.87		
CogCC2	.84			.82		
CogCC3	.94			.93		
CogCC4	.90			.89		



Table 4-8, continued

Variables	Calibration sample ( $N = 516$ )			Validation sample ( $N = 504$ )		
	Factor loading	CR <sup>a</sup>	AVE	Factor loading	CR <sup>a</sup>	AVE
Affective C-C		.91	.71		.90	.69
AffCC1	.82			.79		
AffCC2	.86			.86		
AffCC3	.85			.85		
AffCC4	.85			.82		
Attitude toward the customized products		.95	.83		.94	.81
ATT1	.90			.87		
ATT2	.89			.90		
ATT3	.93			.92		
ATT4	.91			.91		
Satisfaction with the retailer		.92	.70		.93	.72
SAT1	.77			.78		
SAT2	.85			.86		
SAT3	.88			.88		
SAT4	.89			.90		
SAT5	.79			.80		
Product involvement		.94	.80		.95	.83
PINV1	.90			.91		
PINV2	.91			.93		
PINV3	.93			.94		
PINV4	.85			.86		
PINV5_R	—			—		
<i>Model fit</i>						
Chi-square	602.268 ( $df=254$ )			589.996 ( $df=254$ )		
Chi-square/ $df$	2.371			2.323		
CFI	.970			.970		
NFI	.949			.949		
IFI	.970			.970		
TLI	.965			.965		
RMSEA	.052			.051		
	90% CI (.046; .057)			90% CI (.046; .057)		

<sup>a</sup> Composite Reliability

### CFA Results of Fashion & Textiles Category

The total sample of 987 responses was randomly divided into two subsamples: 1) calibration sample ( $N = 474$ ), which is to assess the measurement model and 2) validation sample ( $N = 489$ ), which is to determine the predictive effectiveness of that model. The fit indices of the baseline measurement model with calibration sample ( $N = 474$ ) fell within acceptable ranges,  $\chi^2(384) = 1202.097$ ,  $\chi^2/df = 3.130$ , CFI = .947, RMSEA = .067. According to Hu and Bentler (1999),  $\chi^2/df$  value below 3 or CFI above .95 are used as thresholds for good fit. To achieve a good model fit, respecification of a measurement model was conducted based on modification indices. Examinations indicated that error variances of some items among identity congruence (i.e., CON1 & CON2 and CON4 & CON5) should be correlated each other. The respecification process left the measurement model with a good fit,  $\chi^2(382) = 1087.767$ ,  $\chi^2/df = 2.848$ , CFI = .954, IFI = .954, TLI = .948, RMSEA = .062 [90% RMSEA CI = .058; .067].

As a cross-validation method, the measurement model was validated using validation sample ( $N = 489$ ). The fit indices of the model showed a good fit,  $\chi^2(382) = 993.069$ ,  $\chi^2/df = 2.600$ , CFI = .962, IFI = .963, TLI = .957, RMSEA = .057 [90% RMSEA CI = .053; .062]. The factor loadings and the correlations among the latent variables were very similar to those of the calibration sample. Thus, it was concluded that the proposed measurement model predicts the overall data well. The factor loadings and goodness-of-fit statistics of the model are summarized in Table 4-9.

Table 4-9

CFA Results of Fashion & Textiles Category across Calibration and Validation Samples

Variables	Calibration sample ( <i>N</i> = 474)			Validation sample ( <i>N</i> = 489)		
	Factor loading	CR <sup>a</sup>	AVE	Factor loading	CR <sup>a</sup>	AVE
Identity distinctiveness		.85	.66		.85	.66
DIST1	.89			.87		
DIST2	.65			.66		
DIST3	.88			.89		
Identity congruence		.90	.60		.90	.61
CON1	.71			.68		
CON2	.69			.68		
CON3	.84			.83		
CON4	.81			.86		
CON5	.77			.78		
CON6	.83			.85		
Cognitive C-C		.94	.79		.95	.81
CogCC1	.90			.88		
CogCC2	.80			.85		
CogCC3	.94			.95		
CogCC4	.92			.92		
Affective C-C		.94	.80		.94	.81
AffCC1	.88			.89		
AffCC2	.90			.91		
AffCC3	.94			.93		
AffCC4	.86			.87		
Attitude toward the customized products		.96	.87		.97	.89
ATT1	.94			.94		
ATT2	.93			.93		
ATT3	.92			.95		
ATT4	.94			.96		
Satisfaction with the retailer		.96	.82		.96	.82
SAT1	.84			.86		
SAT2	.92			.90		
SAT3	.94			.93		
SAT4	.94			.94		
SAT5	.88			.89		

Table 4-9, continued

Variables	Calibration sample ( $N = 474$ )			Validation sample ( $N = 489$ )		
	Factor loading	CR <sup>a</sup>	AVE	Factor loading	CR <sup>a</sup>	AVE
Product involvement		.95	.83		.95	.81
PINV1	.93			.93		
PINV2	.94			.95		
PINV3	.93			.93		
PINV4	.83			.78		
PINV5_R	—			—		
<i>Model fit</i>						
Chi-square	1087.767 ( $df=382$ )			993.069 ( $df=382$ )		
Chi-square/ $df$	2.848			2.600		
CFI	.954			.962		
NFI	.931			.941		
IFI	.954			.963		
TLI	.948			.957		
RMSEA	.062			.057		
	90% CI (.058; .067)			90% CI (.053; .062)		

<sup>a</sup> Composite Reliability

#### CFA Results of Food Category

The total sample of 987 responses was randomly divided into two subsamples: 1) calibration sample ( $N = 482$ ), which is to assess the measurement model and 2) validation sample ( $N = 500$ ), which is to determine the predictive effectiveness of that model. The fit indices of the baseline measurement model using calibration sample ( $N = 482$ ) fell within acceptable ranges,  $\chi^2(384) = 1363.737$ ,  $\chi^2/df = 3.551$ , CFI = .938, RMSEA = .073. To achieve a good model fit, respecification of a measurement model was conducted based on modification indices indicating that error variances of some items among identity congruence (i.e., CON1 & CON2 and CON4 & CON5) should be correlated to each other. Also, due to the low squared multiple correlation estimates (SMC) (Bagozzi & Yi, 1988), CON1 and CON2 were deleted from the model. The respecification process

left the measurement model with a good fit,  $\chi^2(328) = 904.859$ ,  $\chi^2/df = 2.759$ , CFI = .961, IFI = .962, TLI = .955, RMSEA = .060 [90% RMSEA CI = .056; .065].

As a cross-validation method, the measurement model was validated using validation sample ( $N = 500$ ). The fit indices of the model showed a good fit,  $\chi^2(328) = 959.638$ ,  $\chi^2/df = 2.926$ , CFI = .959, IFI = .959, TLI = .953, RMSEA = .062 [90% RMSEA CI = .058; .067]. The factor loadings and the correlations among the latent variables were very similar to those of the calibration sample. Thus, it was concluded that the proposed measurement model predicts the overall data well. The factor loadings and goodness-of-fit statistics of the model are summarized in Table 4-10.

Table 4-10

CFA Results of Food Category across Calibration and Validation Samples

Variables	Calibration sample ( $N = 482$ )			Validation sample ( $N = 500$ )		
	Factor loading	CR <sup>a</sup>	AVE	Factor loading	CR <sup>a</sup>	AVE
Identity distinctiveness		.88	.70		.87	.69
DIST1	.85			.85		
DIST2	.72			.70		
DIST3	.93			.93		
Identity congruence		.88	.64		.87	.64
CON1	—			—		
CON2	—			—		
CON3	.78			.78		
CON4	.77			.75		
CON5	.78			.79		
CON6	.87			.87		
Cognitive C-C		.96	.85		.96	.86
CogCC1	.91			.93		
CogCC2	.91			.91		
CogCC3	.96			.97		
CogCC4	.91			.92		

Table 4-10, continued

Variables	Calibration sample ( $N = 482$ )			Validation sample ( $N = 500$ )		
	Factor loading	CR <sup>a</sup>	AVE	Factor loading	CR <sup>a</sup>	AVE
Affective C-C		.93	.78		.94	.79
AffCC1	.88			.89		
AffCC2	.91			.91		
AffCC3	.92			.92		
AffCC4	.81			.82		
Attitude toward the customized products		.96	.87		.97	.88
ATT1	.93			.93		
ATT2	.93			.94		
ATT3	.94			.95		
ATT4	.94			.93		
Satisfaction with the retailer		.96	.82		.96	.81
SAT1	.85			.85		
SAT2	.91			.90		
SAT3	.92			.90		
SAT4	.94			.93		
SAT5	.92			.92		
Product involvement		.94	.80		.93	.77
PINV1	.93			.90		
PINV2	.91			.91		
PINV3	.89			.89		
PINV4	.83			.82		
PINV5_R	—			—		
<i>Model fit</i>						
Chi-square	904.859 ( $df=328$ )			959.638 ( $df=328$ )		
Chi-square/ $df$	2.759			2.926		
CFI	.961			.959		
NFI	.941			.939		
IFI	.962			.959		
TLI	.955			.953		
RMSEA	.060			.062		
	90% CI (.056; .065)			90% CI (.058; .067)		

<sup>a</sup> Composite Reliability

### Measure Validity and Reliability

To further verify the quality of the measurement model, additional measurement properties including convergent validity, discriminant validity, and composite reliabilities were assessed. Convergent validity evaluates the extent to which items designed to measure the same latent variable are correlated with each other (Bagozzi, 1981). This study assessed convergent validity by examining (1) the average variance extracted (AVE) (Fornell & Larcker, 1981) and (2) the standardized factor loading of each construct (Anderson & Gerbing, 1988) and composite reliability (Bagozzi & Yi, 1988). Discriminant validity evaluates the extent to which items designed to measure one latent variable differ from those of other latent variables (Hair et al., 2006). As suggested by Fornell and Larcker (1981), this study assessed discriminant validity by comparing the AVE with possible squared correlations between pairs of constructs.

#### Measure Validity and Reliability of Media Category

AVEs of all constructs exceeded 0.5, indicating that variance explained by each latent construct is greater than the measurement error (Fornell & Larcker, 1981) (Table 4-11). For all constructs, the standardized factor loadings are high and significant at the  $p$ -value of .001 and composite reliabilities are greater than .74 (Table 4-8). Thus, convergent validity of the measurement model for personalized media category was confirmed. Also, AVE for each construct exceeded the shared variance between all pairs of variables, thus ensuring discriminant validity of the measurement model (Table 4-11).

Table 4-11

Discriminant Validity and Convergent Validity – Media Category

	1	2	3	4	5	6	7
1. Distinctiveness	<b>.59(.60)</b>						
2. Congruence	.56(.58)	<b>.61(.58)</b>					
3. Cognitive C-C identification	.14(.18)	.09(.09)	<b>.79(.77)</b>				
4. Affective C-C identification	.37(.45)	.43(.44)	.44(.42)	<b>.71(.69)</b>			
5. Attitude	.40(.43)	.53(.57)	.10(.10)	.51(.52)	<b>.83(.81)</b>		
6. Satisfaction	.45(.41)	.57(.54)	.06(.05)	.37(.38)	.53(.53)	<b>.70(.72)</b>	
7. Product involvement	.21(.28)	.16(.16)	.35(.35)	.36(.44)	.22(.23)	.15(.17)	<b>.80(.83)</b>

*Note.* The numbers in diagonal are the average variance extracted (AVE).

The numbers below the diagonal are the squared correlation coefficients between the constructs.

The numbers in parentheses are from the validation samples; the numbers not in the parentheses are from the calibration samples.

#### Measure Validity and Reliability of Fashion & Textiles Category

AVEs of all constructs exceeded 0.5. This result indicated that variance explained by each latent construct is greater than the measurement error (Fornell & Larcker, 1981) (Table 4-12). For all constructs, the standardized factor loadings are high and significant at the  $p$ -value of .001. Also, composite reliabilities are greater than .85 (Table 4-9), thus ensuring convergent validity of the measurement model for fashion & textiles category. AVE for each construct exceeded the shared variance between all pairs of variables, supporting discriminant validity of the measurement model (Table 4-12).



Table 4-12

Discriminant Validity and Convergent Validity – Fashion & Textiles Category

	1	2	3	4	5	6	7
1. Distinctiveness	<b>.66(.66)</b>						
2. Congruence	.53(.52)	<b>.60(.61)</b>					
3. Cognitive C-C identification	.26(.27)	.22(.25)	<b>.79(.81)</b>				
4. Affective C-C identification	.44(.46)	.50(.49)	.58(.62)	<b>.80(.81)</b>			
5. Attitude	.34(.42)	.50(.59)	.20(.22)	.52(.49)	<b>.87(.89)</b>		
6. Satisfaction	.42(.43)	.51(.54)	.20(.21)	.49(.43)	.62(.69)	<b>.82(.82)</b>	
7. Product involvement	.10(.14)	.09(.13)	.19(.26)	.20(.27)	.13(.15)	.16(.20)	<b>.83(.81)</b>

*Note.* The numbers in diagonal are the average variance extracted (AVE).

The numbers below the diagonal are the squared correlation coefficients between the constructs.

The numbers in parentheses are from the validation samples; the numbers not in the parentheses are from the calibration samples.

#### Measure Validity and Reliability of Food Category

With AVEs of all constructs exceeding 0.5, the results suggested that the variance explained by the latent variable is greater than the measurement error (Fornell & Larcker, 1981) (Table 4-13). For all constructs, the standardized factor loadings are high and significant at the  $p$ -value of .001, and composite reliabilities are greater than .87 (Table 4-10). These results confirmed convergent validity of the measurement model for food category. With AVE for each construct exceeding the shared variance between all pairs of variables, the results ensured discriminant validity of the measurement model (Table 4-13).

Table 4-13

Discriminant Validity and Convergent Validity – Food Category

	1	2	3	4	5	6	7
1. Distinctiveness	<b>.70(.69)</b>						
2. Congruence	.56(.45)	<b>.64(.64)</b>					
3. Cognitive C-C identification	.30(.30)	.22(.19)	<b>.85(.86)</b>				
4. Affective C-C identification	.45(.46)	.39(.40)	.57(.57)	<b>.78(.79)</b>			
5. Attitude	.34(.25)	.56(.57)	.16(.12)	.44(.38)	<b>.87(.88)</b>		
6. Satisfaction	.27(.20)	.47(.44)	.08(.06)	.32(.28)	.68(.67)	<b>.82(.81)</b>	
7. Product involvement	.15(.11)	.14(.12)	.14(.14)	.23(.23)	.19(.19)	.15(.16)	<b>.80(.77)</b>

*Note.* The numbers in diagonal are the average variance extracted (AVE).

The numbers below the diagonal are the squared correlation coefficients between the constructs.

The numbers in parentheses are from the validation samples; the numbers not in the parentheses are from the calibration samples.

The Structural Model

## SEM Results of Media Category

In order to examine the hypotheses 1 through 5, structural equation modeling (SEM) with maximum likelihood estimation was conducted using AMOS 18.0 program. The path model displaying the hypothesized causal relationship among variables is depicted in Figure 4-1. Table 4-14 provides a summary of the results obtained from the structural equation model of personalized media category. Based on guidelines set by Hu and Bentler (1999) and MacCallum et al (1996), adequate model fit was obtained,  $\chi^2$  (237) = 1119.453, CFI = .951, IFI = .951, TLI = .943, RMSEA = .061 [90% RMSEA CI = .058; .065] (Table 4-14). Therefore, the model fits the data reasonably well.

Hypothesis 1 predicted that identity distinctiveness is positively related to consumer–customized product identification both cognitively (H1a) and affectively

(H1b). This relationship argued that increases in perceived distinctiveness of customized products lead to greater consumer identification with the customized products. This relationship was supported based on the positive standardized coefficient of .38 (C.R = 5.84,  $p < 0.001$ ) for cognitive C-C identification and .18 (C.R = 3.50,  $p < 0.001$ ) for affective C-C identification. Therefore, Hypothesis 1a and 1b were supported in personalized media category.

Hypothesis 2 predicted that identity congruence is positively related to consumer-customized product identification both cognitively (H2a) and affectively (H2b). This relationship argued that increases in perceived congruence with the value of customized products lead to greater consumer identification with the customized products. With a positive standardized coefficient of .43 (C.R = 8.47,  $p < 0.001$ ), the results suggested that enhancing identity congruence with customized products positively influenced a consumer's affective identification. However, the relationship was not supported for cognitive C-C identification ( $\beta = .05$ , C.R = 0.78,  $p > 0.05$ ). Therefore, only Hypothesis 2b was supported in personalized media category.

Hypothesis 3 proposed that consumers' cognitive identification is positively related to their affective identification. This relationship was supported based on the positive standardized coefficient of .44 (C.R = 15.06,  $p < 0.001$ ). Therefore, Hypothesis 3 was supported in personalized media category.

Hypothesis 4 proposed that consumers' affective identification with customized products is positively related to their attitude toward customized products (H4a) and satisfaction with the retailers (H4b). In testing H4a and H4b, consumers' affective identification with customized products was found to positively influence their attitude

toward customized products ( $\beta = .72$ ,  $C.R = 23.46$ ,  $p < 0.001$ ) and satisfaction with retailers ( $\beta = .25$ ,  $C.R = 6.46$ ,  $p < 0.001$ ). Therefore, Hypothesis 4a and 4b were supported in personalized media category.

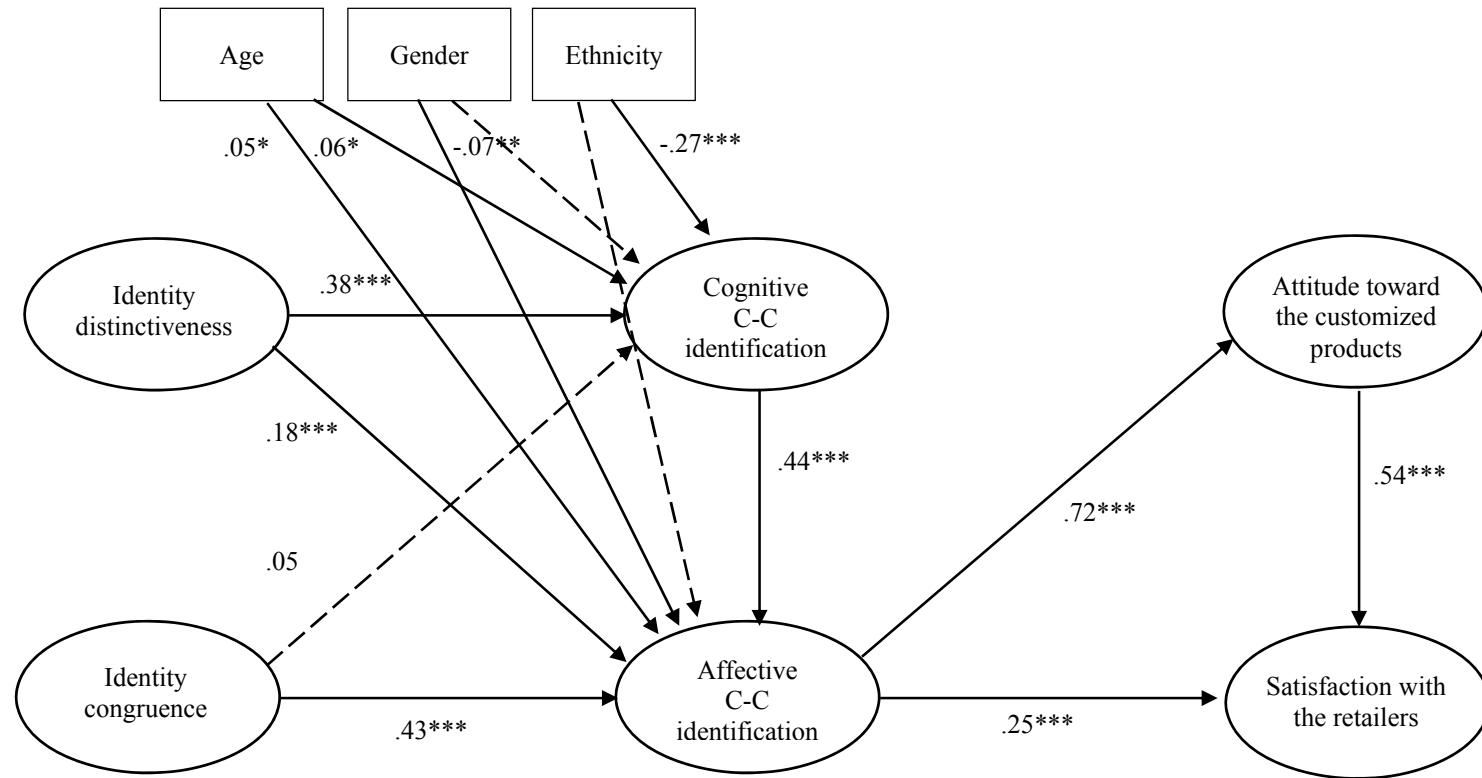
Hypothesis 5 postulated the relationship among consequences of consumer–customized product identification. It was hypothesized that consumers’ attitude toward customized products positively influences satisfaction with the retailers. This relationship was supported based on the positive standardized coefficient of  $.54$  ( $C.R = 13.82$ ,  $p < 0.001$ ). Therefore, Hypothesis 5 was supported in personalized media category.

As for control variables, age, gender and ethnicity were found to significantly influence consumers’ identification with customized products. Age was found to positively influence C-C identification both cognitively and affectively. With a positive standardized coefficient of  $.06$  for cognitive C-C identification ( $C.R = 2.07$ ,  $p < 0.05$ ) and  $.05$  for affective C-C identification ( $C.R = 2.02$ ,  $p < 0.05$ ), the result suggested that the higher age increased consumers’ identification with customized products both cognitively and affectively.

Gender was found to negatively influence affective C-C identification. Gender was coded with 0 for males and 1 for females. With a negative standardized coefficient of  $-.07$  for affective C-C identification ( $C.R = -3.23$ ,  $p < 0.01$ ), the result suggested that male consumers are more likely to affectively identify themselves with customized products than female consumers do.

Ethnicity also produced a significant influence on consumers’ cognitive identification with customized products. Ethnicity was coded with 1 for Caucasian and 0 for non-Caucasian. A negative standardized coefficient for cognitive C-C identification

( $\beta = -.27$ , C.R = -9.04,  $p < 0.001$ ) suggested that non-Caucasian consumers are more likely to cognitively identify themselves with customized products than Caucasian consumers do.



Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Figure 4-1. Structural Equation Model with Parameter Estimate – Media Category

Table 4-14

SEM Results of Media Category

	Std path coefficient	Std. error	C.R	Hypothesis Testing
<i>Structural paths</i>				
H1a. Identity distinctiveness → Cognitive C-C identification	.38	.10	5.84***	Supported
H1b. Identity distinctiveness → Affective C-C identification	.18	.05	3.50***	Supported
H2a. Identity congruence → Cognitive C-C identification	.05	.11	0.78	Not supported
H2b. Identity congruence → Affective C-C identification	.43	.06	8.47***	Supported
H3. Cognitive C-C identification → Affective C-C identification	.44	.02	15.06***	Supported
H4a. Affective C-C identification → Attitude toward products	.72	.03	23.46***	Supported
H4b. Affective C-C identification → Satisfaction with retailers	.25	.03	6.46***	Supported
H5. Attitude toward products → Satisfaction with retailers	.54	.03	13.82***	Supported
<i>Controls</i>				
Age → Cognitive C-C identification	.06	.00	2.07*	—
Age → Affective C-C identification	.05	.00	2.02*	—
Gender → Cognitive C-C identification	.02	.09	0.72	—
Gender → Affective C-C identification	-.07	.04	-3.23**	—
Ethnicity → Cognitive C-C identification	-.27	.10	-9.04***	—
Ethnicity → Affective C-C identification	.01	.05	0.33	—
<i>Model Fit</i>				
Chi-square	1119.453 (df = 237)			
Chi-square/df	4.723			
CFI	.951			
NFI	.939			
IFI	.951			
TLI	.943			
RMSEA	.061 (90% CI = .058; .065)			

### SEM Results of Fashion & Textiles Category

In order to examine the hypotheses 1 through 5, structural equation modeling (SEM) with maximum likelihood estimation was conducted using AMOS 18.0 program. The path model displaying the hypothesized causal relationship among variables is depicted in Figure 4-2. Table 4-15 provides a summary of the results obtained from the structural equation model of fashion & textiles category. Based on guidelines set by Hu and Bentler (1999) and MacCallum et al (1996), adequate model fit was obtained,  $\chi^2(359) = 1661.262$ , CFI = .955, IFI = .955, TLI = .949, RMSEA = .061 [90% RMSEA CI = .058; .064] (Table 4-15). Therefore, the model fits the data reasonably well.

Hypothesis 1 predicted that identity distinctiveness is positively related to consumer–customized product identification both cognitively (H1a) and affectively (H1b). This relationship argued that increases in perceived distinctiveness of customized products lead to greater consumer identification with the customized products. This relationship was supported based on the positive standardized coefficient of .30 (C.R = 6.36,  $p < 0.001$ ) for cognitive C-C identification and .23 (C.R = 7.28,  $p < 0.001$ ) for affective C-C identification. Therefore, Hypothesis 1a and 1b were supported in fashion & textiles category.

Hypothesis 2 predicted that identity congruence is positively related to both cognitive (H2a) and affective (H2b) consumer–customized product identification. This relationship argued that increases in perceived congruence with the value of customized products lead to greater consumer identification with the customized products. With a positive standardized coefficient of .28 (C.R = 6.07,  $p < 0.001$ ) for cognitive C-C identification and .29 (C.R = 9.27,  $p < 0.001$ ) for affective C-C identification, the results



suggested that enhancing identity congruence with customized products positively influenced a consumer's cognitive and affective identification. Therefore, Hypothesis 2a and 2b were supported in fashion & textiles category.

Hypothesis 3 proposed that consumers' cognitive identification is positively related to their affective identification. This relationship was supported based on the positive standardized coefficient of .52 (C.R = 20.59,  $p < 0.001$ ). Therefore, Hypothesis 3 was supported in fashion & textiles category.

Hypothesis 4 proposed that consumers' affective identification with customized products is positively related to their attitude toward customized products (H4a) and satisfaction with the retailers (H4b). In testing H4a and H4b, consumers' affective identification with customized products was found to positively influence their attitude toward customized products ( $\beta = .73$ , C.R = 26.53,  $p < 0.001$ ) and satisfaction with the retailers ( $\beta = .26$ , C.R = 8.17,  $p < 0.001$ ). Therefore, Hypothesis 4a and 4b were supported in fashion & textiles category.

Hypothesis 5 postulated the relationship among consequences of consumer–customized product identification. It was hypothesized that consumers' attitude toward customized products positively influences satisfaction with retailers. This relationship was supported based on the positive standardized coefficient of .60 (C.R = 18.41,  $p < 0.001$ ). Therefore, Hypothesis 5 was supported in fashion & textiles category.

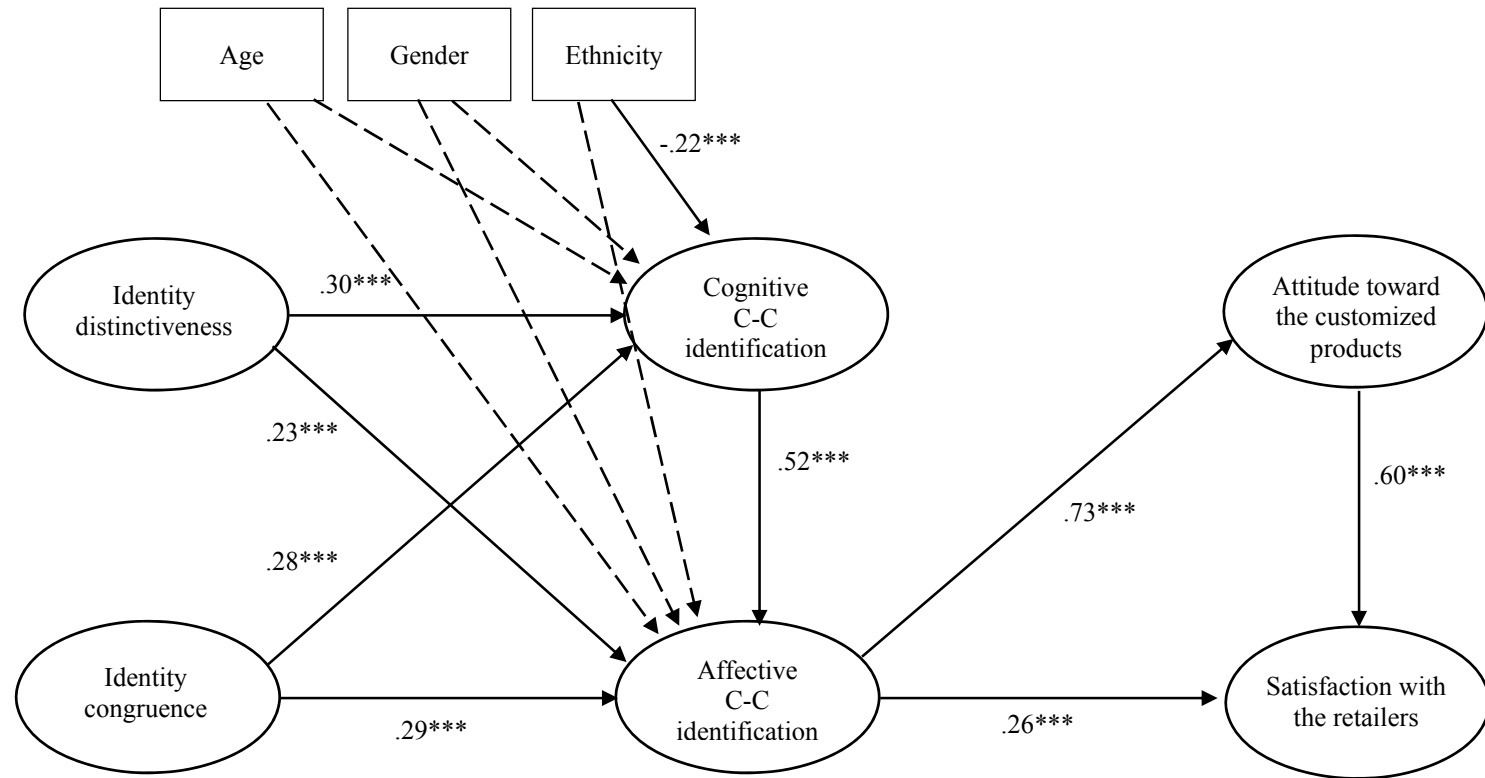
As for control variables, only ethnicity was found to significantly influence consumers' cognitive identification with customized products. Ethnicity was coded with 1 for Caucasian and 0 for non-Caucasian. A negative standardized coefficient for cognitive C-C identification ( $\beta = -.22$ , C.R = -7.98,  $p < 0.001$ ) suggested that non-

Caucasian consumers are more likely to cognitively identify themselves with customized products than Caucasian consumers do.

### SEM Results of Food Category

In order to examine the hypotheses 1 through 5, structural equation modeling (SEM) with maximum likelihood estimation was conducted using AMOS 18.0 program. The path model displaying the hypothesized causal relationship among variables is depicted in Figure 4-3. Table 4-16 provides a summary of the results obtained from the structural equation model of food category. Based on guidelines set by Hu and Bentler (1999) and MacCallum et al (1996), adequate model fit was obtained,  $\chi^2(308) = 1518.723$ , CFI = .957, IFI = .957, TLI = .951, RMSEA = .063 [90% RMSEA CI = .060; .066] (Table 4-16). Therefore, the model fits the data reasonably well.

Hypothesis 1 predicted that identity distinctiveness is positively related to consumer–customized product identification both cognitively (H1a) and affectively (H1b). This relationship argued that increases in perceived distinctiveness of customized products lead to greater consumer identification with the customized products. This relationship was supported based on the positive standardized coefficient of .38 (C.R = 8.93,  $p < 0.001$ ) for cognitive C-C identification and .16 (C.R = 4.88,  $p < 0.001$ ) for affective C-C identification. Therefore, Hypothesis 1a and 1b were supported in food category.



Note.  $***p < .001$

Figure 4-2. Structural Equation Model with Parameter Estimate – Fashion & Textiles Category

Table 4-15

*SEM Results of Fashion & Textiles Category*

	<b>Std path coefficient</b>	<b>Std. error</b>	<b>C.R</b>	<b>Hypothesis Testing</b>
<i>Structural paths</i>				
H1a. Identity distinctiveness → Cognitive C-C identification	.30	.06	6.36***	Supported
H1b. Identity distinctiveness → Affective C-C identification	.23	.03	7.28***	Supported
H2a. Identity congruence → Cognitive C-C identification	.28	.06	6.07***	Supported
H2b. Identity congruence → Affective C-C identification	.29	.03	9.27***	Supported
H3. Cognitive C-C identification → Affective C-C identification	.52	.02	20.59***	Supported
H4a. Affective C-C identification → Attitude toward products	.73	.03	26.53***	Supported
H4b. Affective C-C identification → Satisfaction with retailers	.26	.03	8.17***	Supported
H5. Attitude toward products → Satisfaction with retailers	.60	.03	18.41***	Supported
<i>Controls</i>				
Age → Cognitive C-C identification	-.02	.00	-0.68	—
Age → Affective C-C identification	.02	.00	1.05	—
Gender → Cognitive C-C identification	.04	.09	1.60	—
Gender → Affective C-C identification	-.03	.04	-1.60	—
Ethnicity → Cognitive C-C identification	-.22	.09	-7.98***	—
Ethnicity → Affective C-C identification	-.02	.05	-1.14	—
<i>Model Fit</i>				
Chi-square	1661.262 (df = 359)			
Chi-square/df	4.627			
CFI	.955			
NFI	.943			
IFI	.955			
TLI	.949			
RMSEA	.061 (90% CI = .058; .064)			

Hypothesis 2 predicted that identity congruence is positively related to consumer–customized product identification both cognitively (H2a) and affectively (H2b). This relationship argued that increases in perceived congruence with the value of customized products lead to greater consumer identification with the customized products. With a positive standardized coefficient of .21 (C.R = 4.74,  $p < 0.001$ ) for cognitive C-C identification and .28 (C.R = 8.49,  $p < 0.001$ ) for affective C-C identification, the results suggested that enhancing identity congruence with customized products positively influenced a consumer’s cognitive as well as affective identification. Therefore, Hypothesis 2a and 2b were supported in food category.

Hypothesis 3 proposed that consumers’ cognitive identification is positively related to their affective identification. This relationship was supported based on the positive standardized coefficient of .53 (C.R = 18.70,  $p < 0.001$ ). Therefore, Hypothesis 3 was supported in food category.

Hypothesis 4 proposed that consumers’ affective identification with customized products is positively related to their attitude toward customized products (H4a) and satisfaction with retailers (H4b). In testing H4a and H4b, consumers’ affective identification with customized products was found to positively influence their attitude toward customized products ( $\beta = .64$ , C.R = 21.29,  $p < 0.001$ ) and satisfaction with retailers ( $\beta = .10$ , C.R = 3.62,  $p < 0.001$ ). Therefore, Hypothesis 4a and 4b were supported in food category.

Hypothesis 5 postulated the relationship among consequences of consumer–customized product identification. It was hypothesized that consumers’ attitude toward customized products positively influences satisfaction with retailers. This relationship

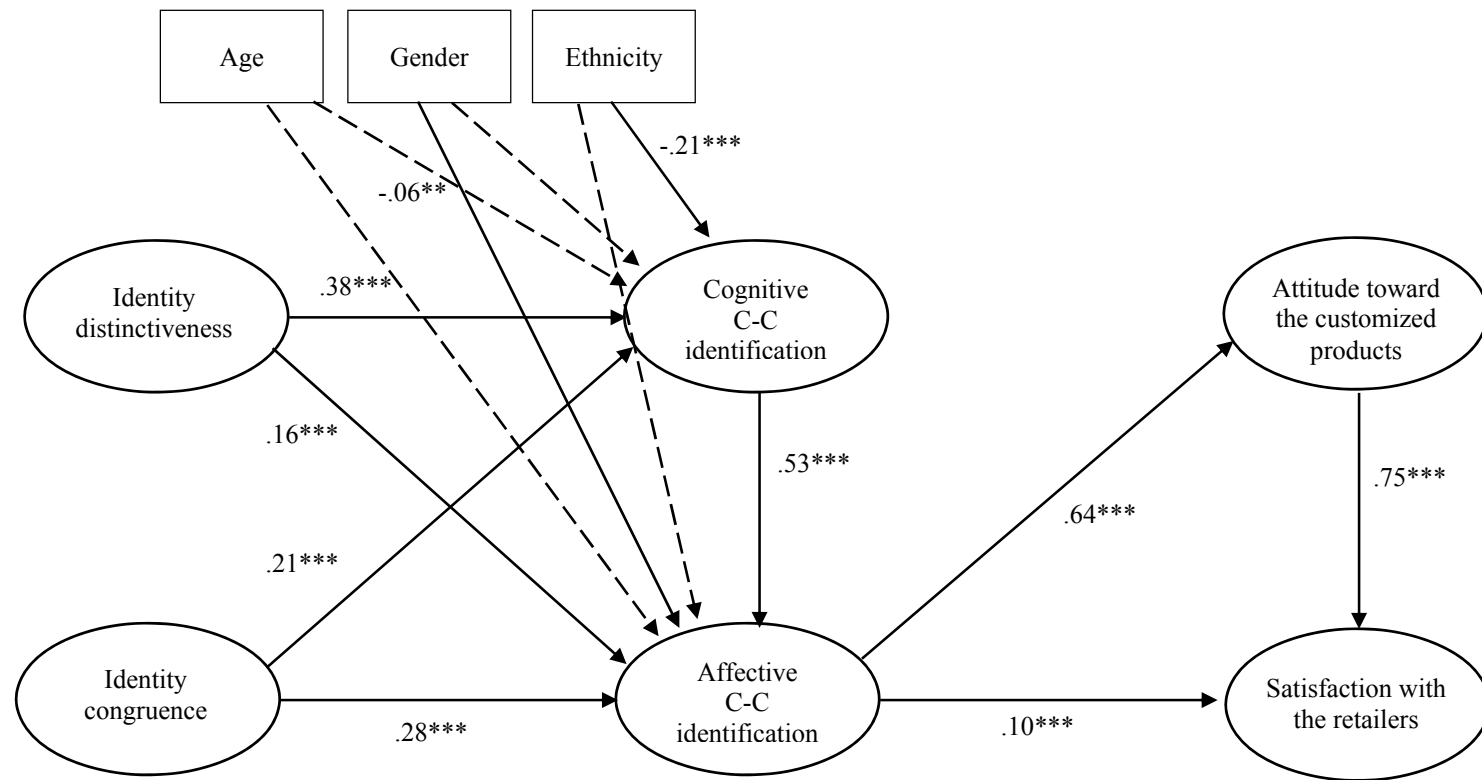
was supported based on the positive standardized coefficient of .75 ( $C.R = 25.38, p < 0.001$ ). Therefore, Hypothesis 5 was supported in food category.

As for control variables, gender and ethnicity were found to significantly influence consumers' identification with customized products. Gender was found to negatively influence affective C-C identification. Gender was coded with 0 for males and 1 for females. With a negative standardized coefficient of  $-.06$  for affective C-C identification ( $C.R = -2.95, p < 0.01$ ), the result suggested that male consumers are more likely to affectively identify themselves with customized products than female consumers do.

Ethnicity also produced a significant influence on consumers' cognitive identification with customized products. Ethnicity was coded with 1 for Caucasian and 0 for non-Caucasian. A negative standardized coefficient for cognitive C-C identification ( $\beta = -.21, C.R = -7.60, p < 0.001$ ) suggested that non-Caucasian consumers are more likely to cognitively identify themselves with customized products than Caucasian consumers do.

#### SEM Results of Rival Model

In order to empirically support the proposed model, a rival model was examined. A recent approach is the treatment of cognitive and affective identification as separate constructs and both directly affect behavioral outcomes (Wolter & Cronin, 2015). Following Wolter and Cronin (2015), this study compared the proposed model with a rival model. A rival model specifies direct paths from cognitive/affective dimension of



Note.  $**p < .01$ ,  $***p < .001$

Figure 4-3. Structural Equation Model with Parameter Estimate – Food Category

Table 4-16

SEM Results of Food Category

	Std path coefficient	Std. error	C.R	Hypothesis Testing
<i>Structural paths</i>				
H1a. Identity distinctiveness → Cognitive C-C identification	.38	.05	8.93***	Supported
H1b. Identity distinctiveness → Affective C-C identification	.16	.03	4.88***	Supported
H2a. Identity congruence → Cognitive C-C identification	.21	.05	4.74***	Supported
H2b. Identity congruence → Affective C-C identification	.28	.03	8.49***	Supported
H3. Cognitive C-C identification → Affective C-C identification	.53	.02	18.70***	Supported
H4a. Affective C-C identification → Attitude toward products	.64	.03	21.29***	Supported
H4b. Affective C-C identification → Satisfaction with retailers	.10	.02	3.62***	Supported
H5. Attitude toward products → Satisfaction with retailers	.75	.03	25.38***	Supported
<i>Controls</i>				
Age → Cognitive C-C identification	-.04	.00	-1.49	—
Age → Affective C-C identification	.03	.00	1.32	—
Gender → Cognitive C-C identification	-.00	.09	-0.06	—
Gender → Affective C-C identification	-.06	.05	-2.95**	—
Ethnicity → Cognitive C-C identification	-.21	.10	-7.60***	—
Ethnicity → Affective C-C identification	-.01	.05	-0.62	—
<i>Model Fit</i>				
Chi-square	1518.723 (df = 308)			
Chi-square/df	4.931			
CFI	.957			
NFI	.947			
IFI	.957			
TLI	.951			
RMSEA	.063 (90% CI = .060; .066)			



C-C identification to consequences of C-C identification. However, a direct path from cognitive C-C identification to affective C-C identification was not specified. In a rival modal, a case could be made that consumers who are high in cognitive/affective C-C identification will consequently have a more positive attitude toward customized products and greater satisfaction with the retailers.

Table 4-17 provides a summary of model fit comparison between the proposed model and the rival model. For model comparison, model fit indices (i.e.,  $\chi^2$ ,  $\chi^2/df$ , CFI, RMSEA, and AIC) were used based on guidelines set by Hu and Bentler (1999) and MacCallum et al (1996). In particular, the AIC value is useful because this index imposes a penalty on fitting additional parameters. Williams and Holahan (1994) also supported that the AIC value was the most effective index for comparing correctly and incorrectly specified models. Smaller values of AIC indicate better fit.

For media category, the fit of the rival model ( $\chi^2(236) = 1133.834$ , CFI = .951, RMSEA = .062 [90% RMSEA CI = .059; .066]) was worse than that of proposed model ( $\chi^2(237) = 1119.453$ , CFI = .951, RMSEA = .061 [90% RMSEA CI = .058; .065]). AIC for the proposed model was 1245.453 versus 1261.834 for the rival model. Thus, the proposed model fits the data better than the rival model for personalized media category. Same conclusion was drawn for fashion & textiles category as well as food category. For fashion & textiles category the fit of the rival model ( $\chi^2(358) = 2046.533$ , CFI = .941, RMSEA = .069 [90% RMSEA CI = .066; .072]) was worse than that of proposed model ( $\chi^2(359) = 1661.262$ , CFI = .955, RMSEA = .061 [90% RMSEA CI = .058; .064]). AIC for the proposed model was 1813.262 versus 2200.533 for the rival model. Thus, the proposed model fits the data better than the rival model for fashion & textiles category.

For food category, the fit of the rival model ( $\chi^2(307) = 1829.968$ , CFI = .946, RMSEA = .071 [90% RMSEA CI = .068; .074]) was worse than that of proposed model ( $\chi^2(308) = 1518.723$ , CFI = .957, RMSEA = .063 [90% RMSEA CI = .060; .066]). AIC for the proposed model was 1658.723 versus 1971.968 for the rival model. Thus, the proposed model fits the data better than the rival model for food category.

Table 4-17

Model Fit Comparisons between Proposed Model and Rival Model

	Media category		Fashion & textiles category		Food category	
	Proposed model	Rival model	Proposed model	Rival model	Proposed model	Rival model
$\chi^2$	1119.453 (df=237)	1133.834 (df=236)	1661.262 (df=359)	2046.533 (df=358)	1518.723 (df=308)	1829.968 (df=307)
$\chi^2/df$	4.723	4.804	4.627	5.717	4.931	5.961
CFI	.951	.951	.955	.941	.957	.946
RMSEA (90% CI)	.061 (.058; .065)	.062 (.059; .066)	.061 (.058; .064)	.069 (.066; .072)	.063 (.060; .066)	.071 (.068; .074)
AIC	1245.453	1261.834	1813.262	2200.533	1658.723	1971.968

Moderation Analysis

Measurement Invariance

Measurement Invariance Results of Media Category

In order to examine the moderating effect of product involvement, a multiple-group analysis was conducted (Byrne, 2001). A median split was used to classify participants as being either high or low in involvement with personalized media products (e.g., calendars, photobooks). The median of product involvement was 5.00. Five hundred and seven respondents above the median were classified as being high in product

involvement and four hundred and eighty respondents below the median were classified as being low in product involvement.

Before testing measurement invariance across groups, measurement model was examined across groups independently. The data fits the measurement model reasonably well for both high product involvement group ( $\chi^2(254) = 586.009$ , CFI = .956, IFI = .956, TLI = .948, RMSEA = .051 [90% RMSEA CI = .045; .056]) and low product involvement group ( $\chi^2(254) = 620.392$ , CFI = .961, IFI = .961, TLI = .954, RMSEA = .055 [90% RMSEA CI = .049; .060]).

To make valid multigroup comparisons, it is necessary to establish invariance for measurement instruments (Steenkamp & Baumgartner, 1998). Following hierarchical procedure proposed by Steenkamp and Baumgartner (1998), this study assessed configural and metric invariance across groups. In testing configural invariance, an unrestricted baseline model was specified in which parameters were freely estimated for both groups (Model 1). An adequate fit of the model to the data was produced:  $\chi^2(348) = 885.461$ , CFI = .964, IFI = .964, TLI = .957, RMSEA = .040 [90% RMSEA CI = .036; .043]. Thus, configural invariance was supported across high and low product involvement groups.

In testing for metric invariance, all of the factor loadings were constrained to be equal across high and low product involvement groups (Model 2). Model 2 was nested within Model 1. The chi-square difference test between Model 2 and Model 1 was  $\Delta \chi^2 = 64.607$  ( $\Delta df = 15$ ),  $p < .001$ . Because full measurement invariance is unlikely to hold in practice (Byrne, Shavelson, & Muthén, 1989), this study followed the procedures recommended by Byrne (2001) to examine partial metric invariance. Metric invariance

constraints were relaxed step by step based on the modification indexes. Finally, a partial metric invariance model was supported, in which three invariance constraints (one factor loading under cognitive C-C identification and two factor loadings under satisfaction construct) were relaxed. The chi-square difference test yielded insignificant results,  $\Delta \chi^2 = 13.426$  ( $\Delta df = 12$ ),  $p > .05$ . Therefore, partial metric invariance was supported.

#### Measurement Invariance Results of Fashion & Textiles Category

A median split was used to classify participants as being either high or low in involvement with fashion & textiles products (e.g., t-shirts). The median of product involvement was 5.25. Five hundred and thirty-one respondents above the median were classified as being high in product involvement and four hundred and fifty-six respondents below the median were classified as being low in product involvement.

Before testing measurement invariance across groups, measurement model was examined across groups independently. The data fits the measurement model reasonably well for both high product involvement group ( $\chi^2(382) = 1091.468$ , CFI = .954, IFI = .954, TLI = .948, RMSEA = .059 [90% RMSEA CI = .055; .063]) and low product involvement group ( $\chi^2(382) = 1042.747$ , CFI = .949, IFI = .950, TLI = .942, RMSEA = .062 [90% RMSEA CI = .057; .066]).

To make valid multigroup comparisons, this study followed hierarchical procedure proposed by Steenkamp and Baumgartner (1998) and assessed configural as well as metric measurement invariance across groups. In testing configural invariance, an unrestricted baseline model was specified in which parameters were freely estimated for both groups (Model 1). An adequate fit of the model to the data was produced:  $\chi^2(564) =$

1720.908, CFI = .957, IFI = .957, TLI = .950, RMSEA = .046 [90% RMSEA CI = .043; .048]. Thus, configural invariance was supported across high and low product involvement groups.

In testing for metric invariance, all of the factor loadings were constrained to be equal across high and low product involvement groups (Model 2). Model 2 was nested within Model 1. The chi-square difference test between Model 2 and Model 1 was  $\Delta \chi^2 = 26.627$  ( $\Delta df = 20$ ),  $p > .05$ . The insignificant change in model fit indicated that the factor loadings were invariant across high product involvement and low product involvement group, supporting full metric invariance.

#### Measurement Invariance Results of Food Category

A median split was used to classify participants as being either high or low in involvement with food products (e.g., birthday cakes). The median of product involvement was 5.75. Four hundred and ninety-six respondents above the median were classified as being high in product involvement and Four hundred and ninety-one respondents below the median were classified as being low in product involvement. Before testing measurement invariance across groups, measurement model was examined across groups independently. The data fits the measurement model reasonably well for both high product involvement group ( $\chi^2(328) = 847.713$ , CFI = .965, IFI = .965, TLI = .960, RMSEA = .057 [90% RMSEA CI = .052; .061]) and low product involvement group ( $\chi^2(328) = 991.817$ , CFI = .951, IFI = .951, TLI = .943, RMSEA = .064 [90% RMSEA CI = .060; .069]).

To make valid multigroup comparisons, this study followed hierarchical procedure suggested by Steenkamp and Baumgartner (1998) and established configural as well as metric invariance across groups. First, in testing configural invariance, an unrestricted baseline model was specified in which parameters were freely estimated for both groups (Model 1). An adequate fit of the model to the data was produced:  $\chi^2(472) = 1496.569$ , CFI = .961, IFI = .962, TLI = .955, RMSEA = .047 [90% RMSEA CI = .044; .050]. Thus, configural invariance was supported across high and low product involvement groups.

Second, in testing metric invariance, all of the factor loadings were constrained to be equal across high and low product involvement groups (Model 2). Model 2 was nested within Model 1. The chi-square difference test between Model 2 and Model 1 was  $\Delta \chi^2 = 24.955$  ( $\Delta df = 18$ ),  $p > .05$ . The insignificant change in model fit indicated that the factor loadings were invariant across high product involvement and low product involvement group, supporting full metric invariance.

### Moderation Analyses

Multigroup structural model analyses were conducted to test hypotheses 6 and 7 which predicted the moderating effect of product involvement on the relationship between antecedents of C-C identification (i.e., identity distinctiveness and identity congruence) and C-C identification. Specifically, Hypothesis 6 predicted that the impact of identity distinctiveness on C-C identification (H6a: cognitive, H6b: affective) is likely to be prominent when a consumer is highly involved with the product. Hypothesis 7 predicted that the impact of identity congruence on C-C identification (H7a: cognitive,

H7b: affective) is likely to be prominent when a consumer is highly involved with the product.

To test whether there are statistical difference in the moderating effect of product involvement across groups, chi-square difference was examined between 1) constrained model, in which the path coefficients for the relationships among variables were constrained to be equal across groups, and 2) unconstrained model, in which all path coefficients in each group were allowed to be freely estimated.

#### Moderation Analyses Results of Media Category

The chi-square difference ( $\Delta \chi^2 = 53.788$ ,  $\Delta df = 7$ ,  $p$ -value  $< .001$ ) between unconstrained model ( $\chi^2 = 1423.154$ ,  $df = 476$ ) and constrained model ( $\chi^2 = 1476.941$ ,  $df = 483$ ) was significant at the alpha level of .001 (Table 4-18). This result indicated that the relationships among variables (i.e., antecedents of C-C identification, C-C identification, and consequences of C-C identification) were significantly different across low product involvement and high product involvement group.

Table 4-18

#### Multiple Group Analysis Results of Media Category

	$\chi^2$	$df$	$\Delta \chi^2$	$\Delta df$	$p$
Unconstrained	1423.154	476	—	—	—
Constrained	1476.941	483	53.788	7	<.001
DIST → CogCC	1447.250	477	24.096	1	<.001
DIST → AffCC	1427.250	477	4.096	1	<.05
CON → CogCC	1432.062	477	8.908	1	<.01
CON → AffCC	1423.539	477	0.385	1	NS
CogCC → AffCC	1447.250	477	24.096	1	<.001
AffCC → ATT	1424.257	477	1.103	1	NS
AffCC → SAT	1428.915	477	5.761	1	<.05
ATT → SAT	1425.379	477	2.225	1	NS

In order to investigate paths that show significant differences across two groups, each path was separately examined using chi-square difference between the constrained model and the unconstrained model. In this step, hypothesis 6 and 7 were tested. The results for the moderating effects of product involvement were summarized in Table 4-18 and Table 4-19.

As shown in Table 4-18, the impact of perceived identity distinctiveness on cognitive C-C identification ( $\Delta\chi^2 (\Delta df= 1) = 24.096, p < .001$ ) as well as affective C-C identification ( $\Delta\chi^2 (\Delta df= 1) = 4.096, p < .05$ ) was significantly different across two groups. The standardized path coefficients of both relationships in the low product involvement group were higher than those in the high product involvement group (Table 4-19). This result suggested that, when consumers identify themselves with the customized products, those who are low in product involvement are more likely to be affected by the perceived distinctiveness of the customized products than those who are high in product involvement. Although the moderating role of product involvement was supported, the direction of its impact was opposite to the original hypotheses, not supporting hypothesis 6a and 6b in media category.

The moderating effect of product involvement on the relationship between identity congruence and C-C identification was supported for only cognitive dimension of C-C identification ( $\Delta\chi^2 (\Delta df= 1) = 8.908, p < .01$ ). The standardized path coefficient in the high product involvement group ( $\beta = .22, p < .001$ ) was significantly higher than those in the low product involvement group ( $\beta = -.01, p > .05$ ) (Table 4-19). This result suggested that perceived congruence with the value of customized products lead to greater cognitive identification with the customized products for only those who are



highly involved in the product category. Therefore, hypothesis 7a was supported in media category.

Although not hypothesized, this study also tested whether the relationship between two dimensions of C-C identification was significantly different across groups. The result ( $\Delta\chi^2 (\Delta df= 1) = 24.096, p < .001$ ) supported the moderating role of product involvement in the relationship between cognitive C-C identification and affective C-C identification. The standardized coefficient of low product involvement group ( $\beta = .46, p < 0.001$ ) was higher than that of high product involvement group ( $\beta = .37, p < 0.001$ ). This result suggested that, when consumers develop their affective identification with customized products, those who are low in product involvement are more likely to be affected by cognitive identification with the customized products than those who are high in product involvement.

Table 4-19

Comparison of Parameter Estimates between Two Groups – Media Category

Paths	Standardized estimates		Chi-square difference
	High product involvement	Low product involvement	
DIST → CogCC	.09***	.25***	24.096***
DIST → AffCC	.04***	.20***	4.096*
CON → CogCC	.22***	-.01	8.908**
CON → AffCC	.53***	.44***	0.385
CogCC → AffCC	.37***	.46***	24.096***
AffCC → ATT	.61***	.67***	1.103
AffCC → SAT	.31***	.15***	5.761*
ATT → SAT	.42***	.61***	2.225

Note. \* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

### Moderation Analyses Results of Fashion & Textiles Category

The chi-square difference ( $\Delta \chi^2 = 26.012$ ,  $\Delta df = 7$ ,  $p$ -value  $< .001$ ) between unconstrained model ( $\chi^2 = 2206.815$ ,  $df = 720$ ) and constrained model ( $\chi^2 = 2232.827$ ,  $df = 727$ ) was significant at an alpha level of .001 (Table 4-20). This result indicated that the relationships among variables (i.e., antecedents of C-C identification, C-C identification, and consequences of C-C identification) were significantly different across low product involvement and high product involvement group.

Table 4-20

### Multiple Group Analysis Results of Fashion & Textiles Category

	$\chi^2$	$df$	$\Delta \chi^2$	$\Delta df$	$p$
Unconstrained	2206.815	720	—	—	—
Constrained	2232.827	727	26.012	7	<.001
DIST → CogCC	2214.297	721	7.482	1	<.01
DIST → AffCC	2206.960	721	0.145	1	NS
CON → CogCC	2220.891	721	14.076	1	<.001
CON → AffCC	2206.830	721	0.015	1	NS
CogCC → AffCC	2214.297	721	7.482	1	<.01
AffCC → ATT	2208.008	721	1.193	1	NS
AffCC → SAT	2210.093	721	3.278	1	NS
ATT → SAT	2216.603	721	9.788	1	<.01

In order to investigate paths that show significant differences across two groups, each path was separately examined using chi-square difference between the constrained model and the unconstrained model. In this step, hypothesis 6 and 7 were tested. The results for the moderating effects of product involvement were summarized in Table 4-20 and Table 4-21.

As shown in Table 4-20, the impact of perceived identity distinctiveness on cognitive C-C identification ( $\Delta \chi^2 (\Delta df = 1) = 7.482$ ,  $p < .01$ ) was significantly different

across two groups. The standardized path coefficient of low product involvement group ( $\beta = .34, p < .001$ ) were higher than that of high product involvement group ( $\beta = .25, p < .001$ ) (Table 4-22). This result suggested that, when consumers identify themselves with the customized products, those who are low in product involvement are more likely to be affected by the perceived distinctiveness of the customized products than those who are high in product involvement. Although the moderating role of product involvement was supported, the direction of its impact was opposite to the original hypotheses, not supporting hypothesis 6a in fashion & textiles category. The impact of perceived identity distinctiveness on affective C-C identification ( $\Delta\chi^2 (\Delta df= 1) = 0.145, p > .05$ ) was not significantly different across groups, not supporting hypothesis 6b in fashion & textiles category.

The moderating effect of product involvement on the relationship between identity congruence and C-C identification was supported for only cognitive dimension of C-C identification ( $\Delta\chi^2 (\Delta df= 1) = 14.076, p < .001$ ). The standardized path coefficient in the high product involvement group ( $\beta = .35, p < .001$ ) was significantly higher than those in the low product involvement group ( $\beta = .11, p < .05$ ) (Table 4-21). This result suggested that perceived congruence with the value of customized products lead to greater cognitive identification with the customized products but for only those who are highly involved in the product category. Therefore, hypothesis 7a was supported in fashion & textiles category.

Although not hypothesized, this study also tested whether the relationship between two dimensions of C-C identification was significantly different across groups. The result ( $\Delta\chi^2 (\Delta df= 1) = 7.482, p < .01$ ) supported the moderating role of product

involvement in the relationship between cognitive C-C identification and affective C-C identification. The standardized coefficient of low product involvement group ( $\beta = .54$ ,  $p < 0.001$ ) was higher than that of high product involvement group ( $\beta = .46$ ,  $p < 0.001$ ). This result suggested that, when consumers develop their affective identification with customized products, those who are low in product involvement are more likely to be affected by cognitive identification with the customized products than those who are high in product involvement.

Table 4-21

Comparison of Parameter Estimates between Two Groups – Fashion & Textiles Category

Paths	Standardized estimates		Chi-square difference
	High product involvement	Low product involvement	
DIST → CogCC	.25***	.34***	7.482**
DIST → AffCC	.25***	.21***	0.145
CON → CogCC	.35***	.11***	14.076***
CON → AffCC	.33***	.30***	0.015
CogCC → AffCC	.46***	.54***	7.482**
AffCC → ATT	.74***	.65***	1.193
AffCC → SAT	.32***	.18***	3.278
ATT → SAT	.50***	.68***	9.788**

Moderation Analyses Results of Food Category

The chi-square difference ( $\Delta \chi^2 = 12.282$ ,  $\Delta df = 7$ ,  $p\text{-value} > .05$ ) between unconstrained model ( $\chi^2 = 2049.000$ ,  $df = 618$ ) and constrained model ( $\chi^2 = 2061.282$ ,  $df = 625$ ) was not significant at the alpha level of .05 (Table 4-22). This insignificant result indicated that the relationships among variables (i.e., antecedents of C-C identification, C-C identification, and consequences of C-C identification) were not

significantly different across low product involvement and high product involvement group. Thus, hypothesis 6 and 7 were not supported in food category.

Table 4-22

Comparison of Parameter Estimates between Two Groups – Food Category

Paths	Standardized estimates		Chi-square difference
	High product involvement	Low product involvement	
DIST → CogCC	.32***	.37***	0.148
DIST → AffCC	.15***	.16**	0.049
CON → CogCC	.28***	.12*	7.881**
CON → AffCC	.26***	.30***	0.275
CogCC → AffCC	.56***	.50***	0.148
AffCC → ATT	.62***	.57***	0.396
AffCC → SAT	.13***	.04	1.842
ATT → SAT	.72***	.76***	0.313

## CHAPTER 5 – DISCUSSION AND CONCLUSION

### Discussion

#### The Effects of Identity Distinctiveness on C-C Identification

Drawing on identity theory (Burke, 1980; Burke & Reitzes, 1981; Stryker, 1968; 1980) and previous research demonstrating the importance of perceived product distinctiveness from the identity signaling perspective (Berger & Heath, 2007; 2008; White & Dahl, 2006), this study predicted a positive relationship between identity distinctiveness and consumer-customized product identification in the context of customized products. The results support a significant impact of identity distinctiveness on both a consumer's cognitive (Hypothesis 1a) and affective (Hypothesis 1b) identification with customized products. That is, when a consumer perceives a customized product to be distinct from others, this helps signal his/her unique identity to others, and thus the consumer cognitively sees him/herself as overlapping with the customized product (i.e., cognitive C-C identification) while he/she develops affect laden responses to the customized product (i.e., affective C-C identification). Furthermore, a significant impact of identity distinctiveness on consumer-customized product identification was consistently found across the three different product categories focused on in this study (i.e., media, fashion & textiles, and food category).

These findings are congruent with previous research on consumer identification, which demonstrated that the distinctive traits of marketing objectives (e.g., customized products) strengthen consumers' identification with the marketing objectives (Bhattacharya & Sen, 2003; Grier & Deshpandé, 2001; Ha & Stoel, 2014; Kim et al., 2001). Furthermore, the results show the identity signaling properties of customized products. By consuming customized products distinct from other products, a consumer may diverge from other consumers and signal his/her unique or distinctive identity to other consumers. With consistent findings across product categories (i.e., media, fashion & textiles, and food category), this study also provides evidence for a generalization regarding the importance of distinctiveness in consumers' identification in the context of customization.

#### The Effects of Identity Congruence on C-C identification

This study draws on extended self (Belk, 1988; Pierce et al., 2003) to examine the importance of identity congruence in the development of a consumer's identification with marketing objectives. The results revealed that identity congruence significantly influenced both a consumer's cognitive (Hypothesis 2a) and affective (Hypothesis 2b) identification with customized products. Identity congruence was defined as a cognitive match between the value derived from customization experiences and a consumer's goal of maximizing preference fit as well as expressing sense of self. With this in mind, the significant results indicated that consumers developed both cognitive and affective identification with customized products which reflected their utilitarian as well as self-expressive values.

The findings share the same view with that of previous research demonstrating that identity congruence strengthens a consumer's identification with the marketing objectives (Bhattacharya & Sen, 2003; Ha & Stoel, 2014; Kim et al., 2001; Tuškej et al., 2013). However, few previous studies have distinguished between value-expressive identity congruence and utilitarian identity congruence (e.g., Kim et al., 2001; Stokburger-Sauer et al., 2012; Tuškej et al., 2013; for an exception, see Ha & Stoel, 2014). Given the benefits gained from customization experiences which enable preference fit and self-expression, this study incorporated both dimensions of identity congruence.

Although a significant impact of identity congruence on C-C identification was found in fashion & textiles and the food category, this relationship was only partially supported in the personalized media category. Specifically, in the personalized media category, identity congruence significantly influenced affective C-C identification but not cognitive C-C identification. Multigroup analyses were conducted in order to examine the relationship between identity congruence and cognitive C-C identification by the level of product involvement. The results showed that a significant association between identity congruence and cognitive C-C identification was found among those consumers who were highly involved with the media category but not among those who were less involved with the media category. This insignificant association might be due to consumers' low involvement with the product category.



### Cognitive and Affective Dimensions of C-C Identification

Regarding the multi-dimensional properties of C-C identification, this study provided two major findings. First, this study showed that C-C identification entailed both cognitive and affective dimensions through examining the direct paths from the antecedents of C-C identification to both cognitive and affective C-C identification (Hypotheses 1 and 2). An exploratory factor analysis also identified C-C identification measures as those having distinctive dimensions (cognitive and affective dimensions), which added support for the multi-dimensionality of C-C identification statistically. The existence of two dimensions of identification is consistent with the findings of previous research (Homburg, Wieseke, & Hoyer, 2009; Johnson et al., 2012; Wolter & Cronin, 2015).

Second, this study further suggested relationships between the two dimensions of C-C identification. The results showed that a consumer's cognitive identification preceded his/her affective identification (Hypothesis 3). That is, cognitive perception in which there is something in common between oneself and an identity in a customized product is a necessary step to developing the affective perception that the product belongs to oneself. In other words, unless consumers develop such a cognitive perception, they barely show affect laden responses to customized products (Bergami & Bagozzi, 2000; Carmeli et al., 2006; Einwiller et al., 2006; Johnson et al., 2012; Van Dick, 2001; Van Dick et al., 2004). Furthermore, with consistent findings across product categories (i.e., media, fashion & textiles, and food category), this study attempted to generalize the role of cognitive identification as a precondition of affective identification in the context of customization.

The relationships among dimensions of C-C identification identified in this study implied that cognitive C-C identification affected consumers' responses to the customization experiences only through affective C-C identification. However, Wolter and Cronin (2015) recently suggested that both cognitive and affective identification directly affected consumer responses. This alternative approach was tested in a rival model in which direct paths from both cognitive and affective identification to consumer responses were specified. The deterioration in model fit of the rival model compared to the proposed model indicates that cognitive C-C identification influenced consumer responses but only through affective identification. This finding provides further evidence in support of the role of cognitive C-C identification as a precondition for affective C-C identification.

#### Consequences of C-C Identification

Prior research on consumer identification has documented that consumers exhibit favorable attitudinal and behavioral responses when identification with marketing objectives occurred (Ahearne et al., 2005; Bergami & Bagozzi, 2000; Bhattacharya & Sen, 2003). Similarly, this study revealed a positive relationship between identification and two relevant consequences: a consumer's attitude toward a customized product and satisfaction with the retailer who provided customization experiences. More specifically, first, significant impacts of affective identification on attitude toward customized products (Hypothesis 4a) as well as satisfaction with the retailer (Hypothesis 4b) were found. The results indicate that when consumers develop affect-laden responses to the customized products (i.e., affective identification), this psychological tie to the

customized products induced a favorable attitude toward the customized products as well as satisfaction with the retailers who offered customization experiences.

Another important consideration of the findings concerns the relationship between two consequences of identification. Based on the marketing literature, this study proposed that a consumer's attitude toward a customized product contributes to satisfaction with the retailer. As predicted, a consumer's attitude toward customized products was found to significantly influence his/her satisfaction with the retailer who offered customization experiences (Hypothesis 5). This finding was consistent across the different product categories (i.e., media, fashion & textiles, and food category), adding evidence to generalize the link from attitude toward customized products to satisfaction with the retailer.

#### Product Involvement as Moderator

This study further proposes that the relationships among variables would vary depending on a consumer's product involvement. The moderating effect of product involvement was examined with the three product categories: personalized media, fashion & textiles, and food category. In brief, no significant differences were found by product involvement level in the food category. For the media and the fashion & textiles categories, two major results were found.

First, the moderating role of product involvement in the relationship between distinctiveness of customized products and C-C identification was examined (Hypothesis 6). The results of the personalized media category indicated that the strength of the impact of identity distinctiveness in cognitive (H6a) as well as affective (H6b) C-C

identification was significantly higher for the low product involvement group than for the high product involvement group. The results of the fashion & textiles category supported this moderated relationship but only for cognitive (H6a) C-C identification. Overall, the results imply that distinctiveness is an important product feature for developing a consumer's identification with customized products especially for those consumers who are less involved in the product category. These findings can be theoretically explained by the elaboration likelihood model (Petty & Cacioppo, 1986). This model states that those who are unable or unmotivated to process message arguments (i.e., low involvement) tend to be persuaded via the peripheral route, whereas those with high involvement are influenced by the central route processing. Applying this model in the context of the current study, those who are less involved in the product category and, thus, less motivated to process information regarding the product are likely to be affected by peripheral cues such as distinctiveness of the customized products as opposed to central cues. The results of this study are also consistent with the advertising literature which shows that under low message content involvement, the distinctive ad stimulus played a crucial role in influencing cognitive responses to the ad (Andrews, Akhter, Durvasula, & Muehling, 1992).

Second, the moderating role of product involvement in the relationship between identity congruence and C-C identification was examined (Hypothesis 7). The results of multigroup structural model analyses supported this relationship only in the identity congruence - cognitive C-C identification association (H7a). Under high product involvement, the cognitive match between the value derived from a customized product and a consumer's goal of self-expression and maximizing preference fit (i.e., identity

congruence) played an important role in determining overall perception that the customized product belonged to the self. The central goal of consuming customized products is to express a consumer's identity (Franke & Piller, 2004; Franke et al., 2010; Merle et al., 2010; Prahalad & Ramaswamy, 2004; von Hippel, 2001). Because high involvement products also provide a way to express the sense of self (Bloch, 1982), the effects of identity congruence on cognitive C-C identification would be facilitated with product categories with which consumers are highly involved.

An important consideration regarding the moderating effect of product involvement is that this is only effective in the cognitive dimension of C-C identification. Consistent results were found across product categories in that, although identity distinctiveness and identity congruence were significantly associated with affective C-C identification in both high and low product involvement groups, the strength of the association was not statistically different by the level of product involvement. In other words, identity distinctiveness and identity congruence were important product features that enhanced a consumers' affective C-C identification regardless of his/her level of product involvement.

Another important consideration was the absence of moderating effect of product involvement in the food category. Overall, the moderating role of product involvement is expected with product categories which are assumed to act as a vehicle for expressing one's identity (Bloch, 1982; Martin, 1998; Mittal, 2006). That is, a consumer's goal of expressing the self through customized products (Franke & Piller, 2004; Franke et al., 2010; Prahalad & Ramaswamy, 2004) would be facilitated only with product categories which are linked to one's self-concept and thus provide a way to express the sense of self

(Bloch, 1982). The food category is generally viewed as less relevant to the self-concept (e.g., Kuenzel & Musters, 2007). This may be the reason why the effects of antecedents on C-C identification are not moderated by one's involvement with a food product.

### Implications

#### Theoretical Implications

Prior research so far has relied on the concept of "extended self" to explain a consumer-customized product relationship (Atakan et al., 2014a; 2014b; Franke et al., 2010; Norton et al., 2012). Yet customized products not only reflect one's sense of self (i.e., extended self) but also act as a vehicle to communicate one's distinct identity to others (Franke et al., 2010; Miceli et al., 2013; Ogawa, S., & Piller, 2006). To understand the identity signaling property of customized products which cannot be explained using "extended self," the current research suggests identity theory as an alternative approach. Based on the theoretical understanding of the identity theory perspective, this study showed two antecedents of identification with customized products. That is, consumers develop their identification with customized products when the customized products reflect a consumer's sense of self (i.e., identity congruence) and signal a consumer's distinct identity to others (i.e. identity distinctiveness).

These antecedents and consequences of C-C identification focused on in the current study are consistent with those developed in social identity theory and the organizational identification literature (Bergami & Bagozzi, 2000; Dutton, Dukerich, & Harquail, 1994; Mael & Ashforth, 1992). Various forms of consumer identification have been applied to consumer identification with marketing objectives such as consumer-

company identification (Bhattacharya & Sen, 2003), consumer-brand identification (Kim et al., 2001; Stokburger-Sauer et al., 2012), and consumer-loyalty program identification (Ha & Stoel, 2014). By exploring customer – product identification in a customization setting, this study provides empirical evidence supporting the generalizability of social identity theory that articulates consumers' identification with another entity (i.e., customized product).

This study contributes to a growing body of research on the conceptualization of consumer identification by specifying two dimensions: cognitive and affective dimensions (Johnson et al., 2012; Wolter & Cronin, 2015). Most research has examined only the cognitive aspect (Atakan et al., 2014a; 2014b; Miceli et al., 2013). Although prior studies acknowledged the importance of consumers' affect-laden responses to the customized products (Atakan et al., 2014a), the affective dimension of identification has been largely neglected. Cognitive and affective dimensions are qualitatively different and both dimensions are necessary in understanding consumer identification (Johnson et al., 2012; Wolter & Cronin, 2015). By providing empirical evidence, the current study is in support of the necessity of taking into account both dimensions of consumer-customized product identification.

This study revealed that cognitive C-C identification precedes affective C-C identification. To the best of our knowledge, this is the first empirical study that has investigated the temporal sequence of dimensions of consumer identification in the context of customization. Cognitive identification as a precondition of affective identification has been examined in the organizational identification literature (Bergami & Bagozzi, 2000; Carmeli et al., 2006; Johnson et al., 2012; Van Dick, 2001; Van Dick et

al., 2004). This study extends the organizational identification literature by providing consistent evidence in consumer research – in the context of customization. Although different constructs (i.e., affective commitment) were used, similar results were found in the context of self-production (Atakan et al., 2014a). Consistent with the current study, Atakan and his colleagues (2014a) showed that consumers form cognitive bonds with self-made products, which enhances the affective relationship.

### Managerial Implications

Beyond the theoretical implications, this study also provides several managerial implications. First, there are two key properties that marketers need to incorporate into the customization experiences they offer: 1) supporting high preference fit (in terms of both utilitarian and self-expressive value), and 2) highlighting distinctive properties of customized products. One way to achieve these properties is to provide customers with a high degree of design freedom during the customization process (Miceli et al., 2013; Franke et al., 2010). That is, in addition to providing a predefined set of design options (e.g., colors, shape, materials), allowing consumers to actively construct symbolic meanings of customized products by integrating their personal symbols or texts can enhance customization experiences. Another way to support consumers' self-expressive values and distinct customization experiences is by developing online communities. For example, Threadless, a young Chicago-based fashion company, is well-known for its strong online community (Ogawa & Piller, 2006). An online community in which consumers submit their own designs and evaluate others' designs provides an opportunity to exchange unique ideas, values, and identities with other users. Also, positive feedback



provided by other users affirms the distinctiveness of consumers' self-designed products (see also Jeppesen, 2005; Franke, Keinz, & Schreier, 2008).

Second, this study guides retail marketers to an understanding of the psychological mechanisms that can boost consumers' relationships with retailers beyond encouraging a positive attitude toward their products. This study found that customization experiences that provide values congruent with consumers' identity develop satisfaction with retailers through C-C identification. This finding is consistent with that of a meta-analysis study on the effectiveness of relationship marketing which shows that the similarity in values between buyer and seller is one of the most beneficial forces in relationship marketing (Palmatier, Dant, Grewal, & Evans, 2006). Given that identification bonding strategy developed based on identity congruence is difficult for competitors to copy easily, retail marketers might consider enhancing customization experiences as a cornerstone to building relationships with consumers.

Third, the relative significance of identity distinctiveness and identity congruence in C-C identification may vary with each consumer's involvement with the product category. The current study found that, in determining cognitive C-C identification, the high product involvement group would be more affected by identity congruence while the low product involvement group would be more affected by identity distinctiveness. This finding suggests that marketers can benefit from developing different communication strategies depending on a consumer's involvement with a product category. For example, when highly involved with a product category, a consumer cognitively identifies with customized products that offer values congruent with a consumer's identity to a greater extent. Therefore, marketers need to emphasize customization experiences which enable

high preference fit (in terms of both utilitarian and self-expressive values) when seeking to attract consumers with high product involvement. On the other hand, those who are low in product involvement are more likely to cognitively identify with customized products that have distinct properties. This finding suggests that when targeting those who are less involved with product categories, marketers need to stress customization experiences that enable consumers to make one-of-a-kind products.

### Limitations

While offering new insights into understanding the psychological processes through which consumers identify with customized products, this study has some limitations. A first limitation lies in the measurement of identity congruence. Identity congruence (i.e., the extent to which customized products are congruent with a consumer's value) was examined in terms of both utilitarian and self-expressive value. Although utilitarian and value-expressive identity congruence were treated as two separate variables in prior studies (e.g., Ha & Stoel, 2014), the unidimensionality analysis indicated them to be under the same variable. Therefore, future research should examine the unidimensionality of identity congruence using different measurement items.

Second, the findings of this study are restricted to the samples drawn from Amazon's Mechanical Turk (Mturk). Mechanical Turk provides participants who are demographically more diverse than those obtained via traditional methods (Buhrmester et al., 2011). Also, the demographic characteristics of Mechanical Turk's samples show that they are relatively young and well educated (Buhrmester et al., 2011; Mason & Suri, 2012), which corresponds to the characteristics of online custom users (Lee & Chang,

2011; Lee et al., 2011; Park et al., 2013). However, there is no empirical evidence that the samples drawn from Mechanical Turk represent well online custom users. Therefore, future research should replicate the results of the study using samples that are representative of online custom users.

Third, the results of this study are limited to three product categories: personalized media, fashion & textiles, and the food category. Although these three were selected based on market dominance (Walcher & Piller, 2012), products belonging to these categories have a limited price range. Recently, luxury fashion brands (e.g., Louis Vuitton's Mon Monogram, Burberry Bespoke) have launched customization platforms which allow consumers to order their own customized products. Because little research has been done on customization experiences with luxury brand products, future research should examine the proposed model of this study using luxury brand products.

#### Future Research

First, future research might investigate the relationship between C-C identification and feelings of competence through customization experiences. Besides the benefits from customization experiences which enable preference fit and self-expression, consumers gain "feelings of competence" about their creation activity (Mochon, Norton, & Ariely, 2012; see also Franke et al., 2010). While consumers are in control of what they want to buy, consumers can signal a competent identity to themselves and to others (Dahl & Moreau, 2007). Such feelings of competence associated with customized products lead to a special relationship between consumers and their customized products (Mochon et al., 2012). Therefore, future studies might examine feelings of competence in customization

experiences and their relationship with C-C identification, such as an antecedent of C-C identification. By doing so, future research can identify other important antecedents of consumer identification which are unique in the context of customization.

Another avenue for future research might be to examine the role of online communities in consumers' customization experiences. Online communities are growing in popularity as companies rely on consumers' support in value co-creation (Fuchs, Prandelli, & Schreier, 2010; Fuchs & Schreier, 2011; Ogawa & Piller, 2006; Prahalad & Ramaswamy, 2000; 2004). While consumers post their own designs and evaluate others' designs in the online community, they communicate their unique ideas, values, and identities with other users. Also, positive feedback provided by other users can affirm the distinctiveness of consumers' self-designed products (see also Jeppesen, 2005; Franke, Keinz, & Schreier, 2008). However, no empirical evidence has yet been provided on the extent to which feedback actually enhances customization experiences. Therefore, a future study might investigate whether consumers' interaction with online users influences their customization experiences.

While this study posited and tested a moderator (i.e., product involvement), other possible moderators are also worthy of investigation using the proposed model. Some possible moderators include need for self-expression and need for uniqueness and a relationship with the brand (see also Chernev, Hamilton, & Gal, 2011). In particular, preliminary evidence observed in Chernev and his colleagues' (2011) study suggests that consumers' relationship with a brand which enables self-expression might affect their perception of customization experiences offered by that brand. Thus, future research

might examine moderators that influence the way consumers respond to customization experiences.

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## APPENDICES

## Appendix A: Scenarios

### Scenarios of Personalized Media Category

Imagine that you go to an online shopping website and customize **a photo book (or a calendar or a card)**.

- First, you choose a size of photo book.
- Second, you choose a frame style that you want among various options available in the website.
- Third, you add photos with your family/friends.
- Fourth, you customize details by selecting different options of layout and background color. You can also add your personal texts, initials, and symbols.
- Lastly, you review your final customized products.

### Scenarios of Fashion & Textiles Category

Imagine that you go to an online shopping website and customize **t-shirts (or other fashion products e.g., shoes, sports jerseys, blanket, etc)**.

- First, you choose a clothing style that you want.
- Second, you customize details by selecting different options of color and fabric. You can also add photos with your family/friends and your personal texts, initials, or symbols.
- Third, you choose the size and quantity of t-shirt.
- Lastly, you review your final customized products.

### Scenarios of Food Category

Imagine that you go to an online shopping website and customize **food products (e.g., wedding cake, birthday cake, drinks, M&Ms, etc)**.

- First, you choose a product type by selecting different options of flavor, color, and size.
- Second, you personalize details by adding images or personal messages to your product.
- Third, you select packaging.
- Lastly, you review your final customized products.

## Appendix B: Measurement of Constructs

### Identity Distinctiveness

[1=strongly disagree; 7=strongly agree]

1. I would say the product that I customized is distinctive.
2. I would say the product that I customized is unusual.
3. I would say the product that I customized stands out from others' customized products.

### Utilitarian Identity Congruence

[1=not at all similar; 7=very similar]

1. How similar is the customized product to the product I initially had in mind?
2. How similar is the value derived from customizing the product to the value derived from shopping for the products that meet my preferences and needs?

[1=little or no achievement; 7=very significant achievement]

3. To what extent would the customized product achieve the goal of making/designing the product I want?

### Value-Expressive Identity Congruence

[1=not at all similar; 7=very similar]

1. How similar is the goal that I associated with customizing the product to the goal of expressing myself through a product in general?
2. How similar is the value derived from customizing the product to self-expressive benefits of consuming a product in general?

[1=little or no achievement; 7=very significant achievement]

3. To what extent would the customized product achieve the goal of expressing myself through a product in general?

### Cognitive Consumer-Customized Product Identification

[1=strongly disagree; 7=strongly agree]

1. My identity is based in part on my relationships with the customized product.
2. Being associated with the customized product helps me express my identity.
3. The customized product is part of my sense of who I am.
4. My sense of self overlaps with the identity of the customized product.

### Affective Consumer-Customized Product Identification

[1=strongly disagree; 7=strongly agree]

1. The things that the customized product stands for make me feel good to be connected with it.
2. Generally, being associated with the customized product gives me a sense of pride.
3. Overall, I feel good when people associate me with the customized product.
4. I feel happy to be a creator of the customized product.



### Attitude toward Customized Products

I would say my evaluation of the customized product is

1. [1=dislike; 7=like]
2. [1=unpleasant; 7=pleasant]
3. [1=unfavorable; 7=favorable]
4. [1=negative; 7=positive]

### Satisfaction with Retailers

[1=strongly disagree; 7=strongly agree]

1. I am delighted that this retailer offers customization experiences.
2. I am satisfied with the manner in which this retailer offers customization experiences.
3. I am happy with the customization experiences provided by this retailer.
4. Overall, I am satisfied with this retailer's offering customization experiences.

[1=very dissatisfied; 7=very satisfied]

5. Based on your customization experiences, how would you rate your satisfaction with this retailer?

### Product Involvement

[1=strongly disagree; 7=strongly agree]

1. I'm very interested in [product type] in general.
2. [Product type] are very important to me.
3. I'm very enthusiastic about [product type].
4. [Product type] are relevant to me.
5. [Product type] do not matter to me.

VITA

## VITA

So Yeon Kwon was born in Seoul, Korea. She received her bachelor's degree in Food & Nutrition from Seoul National University and her master's degree in Hospitality & Tourism Management from Purdue University. In 2011, she joined the doctoral program in Consumer Science at Purdue University. During her Ph.D. program, she wrote several journal articles and conference proceedings for publication. Her research interests include identification marketing, customer relationship marketing strategies, and socially responsible consumer behavior.