COLLABORATING ONLINE: THE ROLE OF INTERACTIVITY AND PERSONALIZATION

Summary

Collaborating with customers is considered a new source of competitive advantage so customer participation and involvement are emerging as key strategic factors. This research studies how interactivity and personalization influence both customers' participation during the online purchase of information services and their intentions to continue participating. It also analyzes whether personalization and interactivity improve customer involvement with the service purchased in online environments. Results verify the importance of interactivity and personalization to foster customer participation, involvement and intentions to continue participating. Moreover, it is found that interactivity moderates the effect of personalization, increasing its influence on service involvement and intentions to participate. This paper demonstrates the convenience of analyzing involvement and participation together in order to understand customer collaboration, as well as the importance of the purchase context from a participation and socialization perspective in the services arena.

Keywords: participation, involvement, interactivity, personalization, information services

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Introduction

The customer's role in value creation is changing from a passive to a more proactive one and is becoming a key success factor for firms (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004). Customer participation is defined as "the degree to which the customer is involved in producing and delivering the service" (Dabholkar, 1990, p. 184). It is critical for firm success because it facilitates the creation of personal experiences that are better suited to each situation and encourages meaningful relationships, promoting customer engagement (Edvardsson, Tronvoll & Gruber, 2011; Prahalad & Ramaswamy, 2004) and generating greater value (Chang & Horng, 2010; Hirschman & Holbrook, 1982).

Several authors have highlighted the close relationship between customer participation and involvement (Barki & Hartwick, 1994; Cermak, File & Prince, 1994; Cheung & To, 2011; Lundkvist & Yakhlef, 2004). Involvement is a psychological concept defined as the level of interest or relevance of a product for individuals and is based on their inherent needs, values, and tastes (Zaichkowsky, 1985). The importance of analyzing customer participation and involvement together has been highlighted in order to comprehensively explain customers' collaborative attitudes, behaviors and performance, and to determine which factors increase these two concepts (Cheung & To, 2011).

In recent decades, the development of information technologies (ITs) has been identified as a key factor that influences business practices, especially in service marketing (Rust & Espinoza, 2006). ITs have changed how consumers interrelate with other actors in the marketplace (i.e. interactivity) and have facilitated the development of offerings (products or services) that are better adapted to the customers' tastes and preferences (i.e. personalization) (Montgomery & Smith, 2009). Individuals no longer demand "pre-fabricated" offerings

developed by the firm, but prefer to personalize their purchases, to share their opinions with other consumers and, consequently, to involve themselves and participate in the creation process (Prahalad & Ramaswamy, 2004). These new possibilities are especially relevant for services, where customer participation is a key issue due to their intangibility and the inseparability of their production and consumption (Lovelock & Wirtz, 2004). Service delivery is an interactive process in which customers are often vital participants who contribute with valuable ideas to improve the service design (Cheung & To, 2011; Wu, 2011). Thus, we propose that interactivity and personalization are critical drivers to improve customers' involvement with a service and to foster their active participation during the purchase experience.

The aim of this research is twofold. Firstly, it studies how personalization and interactivity influence both customers' participation during the purchase of a service and their intentions to continue participating. Secondly, it analyzes whether personalization and interactivity improve customer involvement with the service purchased. We consider that interactivity and personalization change how the customer interrelates with other customers and with the firm, facilitate the creation of self-tailored services and, consequently, may enhance customer involvement and participation in the purchase process. We test these relationships in an online environment, specifically in Internet Protocol television (IPTV), and for information services focusing on a news-on-demand service.

The rest of the article is structured as follows. First, we describe the factors under study: participation and involvement. Then, we explain the effect of interactivity and personalization on services encounters and formulate the hypotheses of study. In the following section, we present the methodology applied and the experimental research. After that, we report the data and the empirical analyses undertaken to test the hypotheses. Finally, we present the most important conclusions and implications of our research, as well as some limitations and opportunities for further research.

From passive to active customers: participation and involvement

New demands and the evolving marketplace are revealing that customer-orientation is not enough for firms that want to succeed. Collaboration with and learning from customers are seen as new sources of competitive advantage and customer participation and involvement are emerging as key strategic factors (Dong, Evans & Zou, 2008; Feng, Sun & Zhang, 2010).

Involvement is considered a fundamental factor for the study of consumer behavior because it promotes the generation of competitive advantages, product quality and positive post-purchase behaviors such as repurchase and recommendation (Cermak et al., 1994; Feng et al., 2010; Kinard & Capella, 2006; Lundkvist & Yakhlef, 2004). Three approaches have emerged to define involvement in the consumer behavior arena: *enduring*, *situational* and *response* involvement (Laaksonen, 1994; Michaelidou & Dibb, 2008).

Enduring involvement refers to a long-term psychological connection of the individual with the stimulus (i.e. product or service), and depends on personal goals, interests and values (Zaichkowsky, 1985). It encompasses *situational* involvement, which is defined as a temporary attachment to an object in a specific situation (Kapferer & Laurent 1985). As an illustration, an individual could feel *enduring* involvement with a product category or a brand, and *situational* involvement with a purchase decision; the product or brand involvement tends to continue and intensify over time, while the *situational* involvement ends when the decision is taken and the purchase is carried out. The third category, *response* involvement, refers to a behavioral approach to this concept, so it includes actions, cognitive responses and decisions (Laaksonen, 1994). This category encompasses behavioral manifestations of attitudinal involvement (Pucely, Mizerski & Perrewe, 1988) and presents serious drawbacks derived from the measurement of involvement outcomes and not the involvement *per se* (Cermak et al., 1994; Dholakia, 1997).

Several authors highlight that it is necessary to restrict the definition of involvement to attitudinal aspects in order to avoid overlapping with other behavioral concepts (Cermak et al., 1994; Dholakia, 1997). Accordingly, it is advisable to use the term involvement exclusively to define the psychological state that reflects the importance of the stimulus, i.e. the product or service, for the customer (Zaichkowsky, 1985) and the term participation to the study of the activities and behaviors of customers (Barki & Hartwick, 1994; Cermak et al., 1994; Russell-Bennett, McColl-Kennedy & Coote, 2007).

An examination of the relevant literature on customer participation reveals three main research streams (see Table 1). The first stream focuses on the firm's perspective and establishes customer participation as a source of economic gains for the firm (Lovelock & Young, 1979). The second stream expands firm frontiers to include customers as temporary members or participants in the production process, considering them as "partial employees" that can increase the firm's productivity (Mills & Morris, 1986).

Take in Table 1

The third stream defines customer participation as a behavioral concept that reflects the active role of customers during the processes of decision-making and the design and distribution of the offering (Bolton & Saxena-Iyer, 2009; Dabholkar, 1990). Participation is analyzed from the postmodernist marketing approach that arose in the 1990s and questioned the artificial distinction between production and consumption. The role of consumers evolved and the traditional view of the firm providing standardized value through its offering became less important. Participation allows customers to anticipate the value of the consumption experience because, from their interactions with the firm, they learn about the characteristics of the offering and the benefits derived from the purchase (Chan, Yim & Lam, 2010; Prahalad & Ramaswamy, 2004). Therefore, participation can strengthen the customer's evaluation of the purchase and his/her attitude towards the firm. Nevertheless, the management of customer participation is more difficult than might be

expected, especially in the service industries, because managers do not always know how to promote active customer behavior or to facilitate service encounters (Wu, 2011).

In the third stream, several topics are studied. Some authors analyze customer participation in the production of the offering, that is, coproduction. They study issues such as customers' motivations and psychological responses to participation (Bendapudi & Leone, 2003; Wind & Rangaswamy, 2001) and strategies to foster participation in new product development activities (Füller & Matzler, 2007; Nambisan, 2002). Other research is focused on the co-creation of value, highlighting the critical role of customers in value creation processes and analyzing the experiential and relational aspects that condition this role (Payne, Storbacka & Frow, 2008; Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004). The notion of the customer as a co-creator of value aligns with the postmodernist notion of the "customizing consumer" and further elaborates on the idea of customers designing their own experiences to create value (Prahalad & Ramaswamy, 2004; Xie, Bagozzi & Troye, 2008).

Following Cermak et al. (1994), we consider that involvement reflects the motivational and psychological mechanisms of the customer which are based on his/her beliefs and feelings, but involvement alone cannot guarantee active and continuous customer participation (Lundkvist & Yakhlef, 2004). In contrast, participation is a behavioral construct that refers to the customer's active collaboration with the firm in the specification and production of the offering (Dabholkar, 1990). Customer involvement and participation may evolve jointly, and it can be observed that a certain level of involvement is needed to motivate customer participation in the production of the offering (Cermak et al., 1994; Lundkvist & Yakhlef, 2004; Shang, Chen, Liao, 2006). Therefore, in order to properly understand the drivers of customer collaboration, it is necessary to study the two concepts together.

Recent IT development offers customers powerful avenues through which to participate and play an active role in the communication and purchase processes, both in offline and

online environments (Blanco-Fernandez et al., 2011). Technology-mediated settings and new devices provide a broad range of tools for customers that firms need to address in order to promote collaborative relationships with customers. These tools are focused on interactivity and personalization and allow customers to partake in the purchase process, modify the offering and learn about the benefits derived from its consumption (Ennew & Binks, 1999). Consequently, it is necessary to study the influence of interactivity and personalization on customer participation and involvement with services.

The role of interactivity and personalization in service encounters

Personalization and interactivity are two key drivers in the specification and designing of services because they encourage customers to provide important inputs of effort, time, information and attention. These drivers enhance consumer-firm communication, generate services tailored to customers' needs and mitigate the intangibility of this kind of product, promoting a favorable perception of service performance (Cheung & To, 2011). Therefore, personalization and interactivity allow customers to better evaluate the features and benefits of services, and encourage their purchase (Edvardsson et al., 2011; Yoo, Lee & Park, 2010). Below, the importance of these factors in the services arena and their influence on developing participation and involvement are analyzed.

Interactivity

This concept, as a feature of computer-mediated environments, has been widely analyzed and recognized in marketing and information science literature (Hoffman & Novak, 1996; Yoo et al., 2010). There have been several attempts to define this concept but they do not always lead to a universally accepted definition (Yadav & Varadarajan, 2005; Yoo et al., 2010). One of the most important approaches defines interactivity as the degree to which a communication technology allows the design of an environment where customers have the chance to

interchange messages and communicate with one or more people at the same time (McMillan & Hwang, 2002; Mollen & Wilson, 2010). In the marketing arena, customer interactions promote value creation, reinforce consumer-to-consumer bonds, and support brand communities (Schau, Muñiz & Arnould, 2009; Sigala, 2009); interactivity also improves customers' perceived value, purchase experience and satisfaction (Dabholkar & Sheng, 2012; Wang, Yu & Wei, 2012; Yoo et al., 2010).

Interactivity in services has become very important in recent years (Bolton & Saxena-Iyer, 2009; Malthouse & Hofacker, 2010; Yoo et al., 2010). It provides an enriched communication medium that enhances the customers' experience through reciprocal communication and connectedness, promoting networks of customer relationships and information (Blanco-Fernandez et al., 2011). Interactivity also favors alternative ways of seeking information, new forms of knowledge exchange, and the development of communities in which customers can make better decisions and create value (Seraj, 2012; Yadav & Varadarajan, 2005). As customers actively share information on the offering, they evolve into active participants who voice their opinions about the marketing activities of firms (Lee, Lee & Lee, 2012).

In online environments, consumers who take part in two-way dialogues and socialization processes provide more information about their interests and preferences, so interactivity is critical to foster their participation (Bolton & Saxena-Iyer, 2009; Dabholkar & Sheng, 2012; Wu, 2011). Moreover, customers rely on what they have learned from peers and this influences their involvement with the offering (Kim, Fiore & Lee, 2007). Information provided by other consumers facilitates customers' evaluation (Fiore & Jin, 2003; Kim et al., 2007), and it has been observed that the more eager customers are to learn about the offering, the more involved they will be with it (Franke, Keinz & Steger, 2009; Wang et al., 2012). To sum up, we propose that creating compelling experiences that allow customer interactions intensifies their attention,

encourages their participation with the firm (Nambisan, 2002; Silverston et al., 2009), and increases their interest and involvement in the service purchased (Wang et al., 2012). Consistent with this, we hypothesize the following relationships:

Hypothesis 1a: The interactivity experienced during the purchase positively influences customer participation.

Hypothesis 1b: The interactivity experienced during the purchase positively influences customer intentions to continue participating.

Hypothesis 1c: The interactivity experienced during the purchase positively influences customer involvement with the service purchased.

Personalization

This concept has been studied in various academic fields but there is still some confusion among researchers about what the term actually means (Kwon & Kim, 2012; Sunikka & Bragge, 2012). In the marketing arena, Vesanen (2007) proposes that personalization is a broad concept that encompasses execution, marketing outputs in the form of products/services, promotion/communication, price and delivery, and the creation of value for both the customer and the marketer.

Our research focuses on the notion of personalization as the customers' capacity for designing the product that they are going to purchase, which has also been called co-design. Personalization implies that the firm and customers jointly design the offering, allowing customers to adapt it to their own preferences (Füller & Matzler, 2007). Likewise, it is more likely that the resulting product will meet customers' expectations and better satisfy their needs (Bharadwaj, Naylor & Hofstede, 2009; Kwon & Kim, 2012). Moreover, personalization gives customers an opportunity to distinguish themselves from others by possessing a truly unique product (Franke, Keinz & Schereier, 2008; Wind & Rangaswamy, 2001). In this case, customers will be more inclined to buy it and return to the same retailer

for future exchanges (Bharadwaj et al., 2009; Franke et al., 2009). Therefore, we can state that personalization must be considered a strategic variable for influencing customer purchase behavior (Kwon & Kim, 2012).

New ITs have increased the possibilities of personalization because they facilitate the collection, management and processing of information (Vesanen, 2007). A number of benefits are derived from personalization in online environments. Firstly, it allows customers to increase their autonomy -unpressured willingness to engage in an activity-, to bolster their competence -by increasing the effectiveness of their actions-, and to satisfy their need for establishing close emotional bonds with other people. Secondly, it influences the consumer-firm relationship (Lee et al., 2012) and promotes customer retention and loyalty by providing superior value (Kwon & Kim, 2012; Tam & Ho, 2006). Finally, it has a great impact on decision outcomes, encouraging purchase behavior and improving customer engagement, performance, satisfaction and social status (Ball, Coelho & Vilares, 2006; Lavie et al., 2010).

Personalization has been proposed as a potential incentive for customer participation in service development (Kwon, Cho & Park, 2010; Nambisan, 2002). According to Lee et al. (2012), it constitutes a kind of active customer participation in the production process since it allows customers to design and deliver the offering. Personalization involves the possibility of selecting and tailoring the features of the service according to the customers' preferences, which increases their participation during the purchase experience, their satisfaction with this participation, and their intentions to continue participating in the near future (Franke, Schreier & Kaiser, 2010). Moreover, it influences customers' information processing about the service (Tam & Ho, 2006) and this information improves their interest in and knowledge of the product. We propose that the more involved customers are in designing and personalizing the service, the more satisfactory their experience will be and the greater their interest in the service. Consistent with this, we formulate the following hypotheses:

Hypothesis 2a: The personalization experienced during the purchase positively influences customer participation.

Hypothesis 2b: The personalization experienced during the purchase positively influences customer intentions to continue participating.

Hypothesis 2c: The personalization experienced during the purchase positively influences customer involvement with the service purchased.

Finally, we propose that interactivity moderates the effect of personalization on participation, involvement and intentions to continue participating.

Personalization has advanced greatly in conjunction with the evolution of online environments and interactive marketing (Lee et al., 2012). Implementing successful personalization activities online requires an environment that must be information-rich and well-suited to the interactions between customers and with the firm (Malthouse & Hofacker, 2010; Montgomery & Smith, 2009). Interactivity benefits consumer decision-making and promotes a more personalized marketing strategy since it permits the collection of diverse knowledge and expertise of different agents involved in the purchasing process, cultivating an environment suitable for personalization activities (Auh et al., 2007; Montgomery & Smith, 2009; Yadav & Varadarajan, 2005).

Moreover, interactivity contributes to minimizing the information overload in online environments and the negative effects of an increasing variety of options that entail personalization strategies. The growing number of options and decisions that customers have to face during the personalization process can jeopardize the outcomes either because the customers lack the necessary knowledge or because of the difficulties of successfully articulating their preferences (Miceli et al., 2007). Thus, interactivity allows customers to access and provide more pertinent data with less effort and, in this way, they receive personalized value in terms of services and information (Lee et al., 2012; Miceli et al., 2007; Montgomery & Smith, 2009).

According to Zeithaml and Bitner (1996), personalization can be facilitated by socialization among customers. Gathering support during the personalization process not only from the firm but also from other consumers fosters customer satisfaction with the personalization activities performed. Furthermore, customer interactions help to reduce customer uncertainty, promoting intentions to participate. Consequently, we propose that the possibility of communicating with other agents and of commenting on the results obtained from personalization activities increases the value of these activities and strengthens their effect on customers' participative behavior and involvement with the service purchased:

Hypothesis 3a: The interactivity experienced during the purchase positively moderates the effect of personalization on customer participation.

Hypothesis 3b: The interactivity experienced during the purchase positively moderates the effect of personalization on customer intentions to continue participating.

Hypothesis 3c: The interactivity experienced during the purchase positively moderates the effect of personalization on customer involvement with the service purchased.

Figure 1 shows the relationships proposed in our research.

Take in Figure 1

Methodology

IPTV and information services

Advances in ITs, such as interactive television, smartphones, PDAs and tablets, have facilitated the emergence of new devices that allow different means of establishing relationships with firms. In our study, we analyze Internet Protocol Television (IPTV). IPTV arises from the convergence of TV services (an entertainment medium) and the Internet (an information source) into a new distribution channel. It offers more possibilities than cable TV and provides an open platform for delivering products because it enables more personalized

contents and interactive experiences. Traditional passive TV users become active elements that demand a larger offer to match their preferences and enhance their TV experiences (Cesar & Chorianopoulos, 2008). IPTV provides interesting possibilities for individuals to get involved and participate, and a clear business opportunity for firms that should be further investigated (Shin, 2007).

IPTV has fostered the emergence of new information services for content distribution (Shin, 2007). One example of these services are news-on-demand packages, a service that allows customers to select and personalize the quantity and themes of a news bundle that they can access through their IPTV on a daily basis. This provides enhanced user experience and a service tailored to the customers' expectations.

The instrument

We developed a testbed platform which included the most outstanding strengths and features of IPTV. The platform integrated online access to Digital Video Broadcasting Terrestrial (DVB-T) content with the possibility of consuming cached contents (TV shows, movies, serials, etc.) provided from servers through a broadband connection. Common TV channels were supplied via the IPTV service from a server connected directly to a DVB-T receiver while cached contents were stored in a media contents database that was accessed by the media service when the customer required. Furthermore, our platform provided access to public Internet services such as Web pages, e-mail, e-commerce and social networks. All these services were delivered via IP protocol through a suitable network infrastructure.

Experimentation process

The experimental design used was two-way factorial between subjects: two levels of interactivity (presence and absence) and two levels of personalization (presence and absence). Each participant was randomly assigned to one of the four experimental scenarios and seated in a separate booth, ensuring that no interaction between subjects was possible during the

experiment (Franke et al., 2009).

First of all, a menu was displayed from which participants, based on their own preferences, had to configure the IPTV platform and select the contents that they were more likely to consume (series, documentaries, news, etc.) (see Figure 2). After the configuration of the IPTV platform, the participant was requested to fill in a short online questionnaire which contained control variables related to individual and platform features that could affect the further development of the experiment and the participant's subsequent behavior. These control variables were (1) individual innovativeness, (2) his/her Internet frequency access, and (3) his/her perception about the initial performance of the IPTV platform. Moreover, we check that none of the participants had previously heard about television news-on-demand packages.

Take in Figure 2

Then, participants watched a news-on-demand package demo which included different topics (sports, politics, science, culture, etc.). After watching the demo, they were randomly assigned to one of the four scenarios and an extra instructions sheet with the activities that they had to perform was provided depending on the scenario assigned. In order to ensure control of the conditions in the experiment, the IPTV platform did not allow the participant to continue with the experiment unless all the instructions were followed.

In the two scenarios with personalization, participants had to select the different topics and the number of news items that they would want to watch on their IPTV platform in a real situation, designing their own news-on-demand package. On the contrary, in the two scenarios without personalization, participants did not have these possibilities and were informed that, in the following days, they would receive news packages designed by the server. Moreover, participants in the scenarios with interactivity were asked to interchange messages and information through several tools: e-mail, forums and social networks. They were also asked to vote for the most interesting news and comment on the videos that were

displayed in the "most viewed" gallery.

Tools and activities that represent interactivity and personalization levels were obtained from research on the topic (McMillan & Hwang, 2002; Song & Zinkhan, 2008) and from practices carried out by firms in the online environment (see, for example, BBC iplayer, Boxee). Figure 3 shows the screen shot of the user's interface with personalization and interactivity features. In the box bounded by the green continuous line, we can see the personalization component, consisting of the possibility of choosing different types of news to adapt the package to the customers' preferences. The interactivity component is contained within the boxes bounded by red dotted lines: the possibilities of e-mailing a news article, of sharing it on a social network (facebook, myspace, etc.) and of writing comments in a forum.

After interacting with the interface, the respondents in the four scenarios were redirected to a second online questionnaire about their perceptions and experience with IPTV and news-on-demand packages.

Take in Figure 3

Scales and sample

Two pre-tests, with a 30-person sample in each, were carried out to validate the IPTV platform and to refine the measurement scales. In the experimentation process, we gathered a sample of 199 university students aged between 20 and 38 (117 females). Students enrolled in different undergraduate and postgraduate marketing, engineering and management modules participated voluntarily in the experiment. We consider that a population sample based on university students is an adequate choice for our research purposes due to their intensive usage of ITs. According to Netsize (2010), this sample belongs to the population segment with the highest rate of Internet use in Europe. At the end of the experiment, the participants received a refreshment voucher. The experiments were carried out in the university computer labs over a seven-week period during May and June, 2010.

Control variables were measured as follows: (1) individual innovativeness: "If I heard about a new information technology, I would look for ways to experiment with it" and "Among my peers, I am usually the first to try out new information technology", measured with a 7-point Likert scale, the lowest perception being scored with 1, (2) Internet frequency access: "How often do you access to the Internet?", measured with seven ordinal answers ranging from "Never or almost never" to "Several times per day", and (3) his/her perception about the initial performance of the IPTV platform: "This kind of TV allows me to configure the menu as I like" and "This kind of TV allows me to select the contents according to my preferences", measured with a 7-point Likert scale, the lowest perception being scored with 1. There were no significant differences in any of these variables between participants in the scenarios analyzed, indicating that the random assignment to the four experimental scenarios was successful.

In the second questionnaire, subjects were asked to score the personalization and interactivity of IPTV in order to check that the manipulations were adequate. Different scales from the literature were used to measure the variables analyzed (see Table 2). Participation and intentions to continue participating were measured on a 7-point Likert scale, the lowest perception being scored with 1. The definition of the scale is consistent with the third stream of the participation research mentioned above, which considers that the customer has a creative and participative role in the design and elaboration of the offering (Bolton & Saxena-Iyer, 2009; Dabholkar, 1990). We have taken into account several empirical and conceptual studies, such as Bendapudi and Leone (2003)'s research which analyzed customer participation in the production of the offering, Dong et al. (2008)'s work which studied customer participation in the service recovery, and Merle, Chandon and Roux (2008)'s paper which tested creative value derived from customer participation in the co-design of the offering. We have also considered the scale of customer service production (Zolfagharian & Sheng, 2012). Likewise, we have captured aspects such as customer participation in the

creative process and product configuration, as well as the customers' feelings of autonomy derived from their experience during the process. Regarding intentions to continue participating, we have adapted the scale of the individual's intentions that is frequently used in online purchase behavior research (Chiu, Hsu, Lai & Chang, 2012; Dong et al., 2008; Kuo & Wu, 2012). This scale includes items related to customer willingness to collaborate with the firm creating services in the future and the likelihood that the customer will use online design applications in future purchases on IPTV. To measure service involvement, we selected 6 seven-point bipolar scales from Zaichowsky's (1985) instrument (see other similar empirical applications in Barki & Hartwick, 1994; Halepete, Littrell & Park, 2009; Kim et al., 2007; Shang et al., 2006; among others). Moreover, we included an item that reflects the innovative nature of the service analyzed (INV_1). Additionally, a single index score for each variable was computed by averaging the corresponding items.

Take in Table 2

Data analysis and findings

The initial measurement model was evaluated on the basis of the result of a confirmatory factor analysis through Structural Equation Modeling (SEM), using the robust maximum likelihood estimation method and the statistical software EQS, version 6.1. (Bentler, 1995). This analysis purifies measures and reduces possible confusions in interpretation (Anderson & Gerbing, 1988). First of all, we checked the criteria proposed by Jöreskog and Sörbom (1993): weak convergence, strong convergence and the explanatory coefficient ($R^2 < 0.3$) (Steenkamp & Van Trijp, 1991) and we progressively eliminated, one by one, the indicators which did not satisfy one or more of them. The last item of the service involvement scale (INV_7) was excluded. The analysis was subsequently repeated for the remaining items. The indicators showed acceptable values for the three criteria (Table 3). The next step was to

check that the goodness-of-fit indices exceeded the optimal levels recommended by Hair, Anderson, Tatham and Black (1999): NFI: 0.938; NNFI: 0.965; CFIR: 0.972; IFI: 0.973; RMSEA: 0.061; X^2 normed: 1.72.

Measurement properties of the final model were evaluated in terms of convergent validity, discriminant validity and reliability (Churchill, 1979; Gerbing & Anderson, 1988). The reliability of the scales was tested using Cronbach's α, the Composite Reliability Coefficient and the Average Variance Extracted (AVE). In all cases, the results achieved surpassed the recommended limit of 0.7 (Nunnally, 1978), 0.7 (Bagozzi & Yi, 1988) and 0.6 (Fornell & Larcker, 1981), respectively. As for convergent validity, the standardized loadings were higher than 0.5 and they were also significant at the 99% confidence level (Steenkamp & Van Trijp, 1991). Discriminant validity of the measures was established by calculating the 99 per cent confidence interval of the latent factor correlation matrix and verifying that 1 was not included (Anderson & Gerbing, 1988) (Table 3).

On the basis of these criteria, we conclude that the measures in the study exhibited sufficient evidence of reliability and convergent and discriminant validity.

Take in Table 3

Manipulation checks

In order to test the adequacy of the manipulations, independent-means t-test analyses were performed.

For the interactivity manipulation, the means are $M_{interactivity}$= 6.02 and $M_{no\text{-}interactivity}$= 3.54 ($t_{182.846}$=12.286, p< .001, r=0.67), showing that this manipulation is successful. Similarly, the personalization manipulation means are $M_{personalization}$= 6.37 and $M_{no\text{-}personalization}$= 4.85 ($t_{154.693}$= 8.744, p< .001, r=0.57). These results show both significant different means and effect sizes of the manipulations applied in the experiment. The fact that all means are above the scale midpoint is because the customers perceive online environments as highly interactive and

personalized. The IPTV characteristics were common to all the scenarios and increase the means obtained, independently of the activities performed during the purchase process. We should recall that no variation between scenarios was obtained for the control variable related to the initial performance of the IPTV platform.

Hypotheses testing

As we are testing the effects of manipulated variables on several dependent variables, multivariate analysis of variance (MANOVA) is the most appropriate method (Hair et al., 1999). Considering the large sample size and the robustness of MANOVA to departures from multivariate normality (Swait & Adamowicz, 2001), violations of multivariate normality are not expected to be severe. Moreover, as MANOVA assumes linear relationships between all pairs of dependent variables in each scenario, we plotted the dependent variables and obtained a clear indication of linear relationships. Correlations between dependent variables were also significant (Table 4). Results of MANOVA analysis are displayed in Table 5. The multivariate effects of interactivity (Wilks' λ= 0.857, F= 10.693, p< .001) and personalization (Wilks' λ= 0.719, F= 25.153, p< .001) are both significant. The two-way interaction effect between the personalization and interactivity variables is also significant (Wilks' λ= 0.935, F= 4.436, p< .01).

Take in Tables 4 and 5

Follow-up univariate analyses were used to test our hypotheses. The results of the ANOVA tests are presented in Table 5 and the descriptive statistics in Table 6. The univariate results for the user's participation factor reveal that there are significant main effects of interactivity ($M_{interactivity}$= 5.44, $M_{no\text{-}interactivity}$= 4.49; $F_{1,195}$= 28.926, p< .001, ω^2=0.36) and personalization ($M_{personalization}$= 5.69, $M_{no\text{-}personalization}$= 4.24; $F_{1,195}$= 67.368, p< .001, ω^2=0.57), both in the expected direction. The inspection of the marginal means shows that the presence of interactivity and personalization improves customer participation with the firm (see Table 6). H1a and H2a are supported.

Take in Table 6

With respect to intentions to continue participating, the main effects of interactivity ($M_{interactivity}$= 5.62, $M_{no\text{-}interactivity}$= 4.91; $F_{1,195}$= 16.534, p< .001, ω^2=0.24) and personalization ($M_{personalization}$= 5.59, $M_{no\text{-}personalization}$= 4.94; $F_{1,195}$= 13.854, p< .001, ω^2=0.20) are significant and positive, which corroborates H1b and H2b (see Tables 5 and 6). If we compare the means obtained for customers' intentions in the presence and absence of interactivity and personalization, we can state that the presence of these features during the relationship improves customers' intentions to continue participating with the firm.

Similarly, interactivity ($M_{interactivity}$= 5.58, $M_{no\text{-}interactivity}$= 4.98; $F_{1,195}$= 16.164, p< .001, ω^2=0.23) and personalization ($M_{personalization}$= 5.43, $M_{no\text{-}personalization}$= 5.12; $F_{1,195}$= 4.341, p< .05, ω^2=0.06) have significant effects on service involvement. Consequently, we can conclude that the presence of these features improves the customers' service involvement, verifying H1c and H2c.

H3 proposed that interactivity moderates the relationship between personalization and the three dependent variables, so we tested the interaction effects between interactivity and personalization. Results of the ANOVA analyses indicate that the interaction effect is not significant for participation, as can be seen in Table 5 ($F_{1,195}$= 0.356, p> .10), so H3a is rejected. However, the analyses show significant interaction effects for intentions to participate ($F_{1,195}$= 4.695, p< .05, ω^2=0.07) and service involvement ($F_{1,195}$= 5.225, p< .05, ω^2=0.08). H3b and H3c are supported. To further study the significant interaction effects found, we examined the correlational results and simple effects for each interactivity group (presence vs. absence), as well as the marginal means. Following Andrews et al. (2004), we analyzed the correlations of personalization with intentions to participate and service involvement, finding that they are statistically different between groups (t= 3.045, p<.01 and t= 2.04, p<.05, respectively). These correlational differences are consistent with the significance of the moderating effects of interactivity on personalization. Moreover, we

conducted separate one-way ANOVA analyses for each group in order to test the simple effects of personalization (Keppel, 1991). Results for the interactivity group revealed significant univariate effects of personalization on intentions to continue participating ($F_{1,98}$= 18.76, p< .001, ω^2=0.26) and also on service involvement ($F_{1,98}$= 9.6, p< .01, ω^2=0.15). In the interactivity absence group, results were not significant either for intentions to continue participating ($F_{1,97}$= 1.123, p>.1) or for service involvement ($F_{1,97}$= 0.02, p>.1). These results also verify H3b and H3c. Finally, the marginal means (see Figures 4 and 5) indicate that, in the presence of interactive tools, the ratings for intentions to continue participating and involvement are higher in the personalization scenario ($M_{intentions}$= 6.13 and $M_{involvement}$= 5.9) than in the no-personalization scenario ($M_{intentions}$= 5.10 and $M_{involvement}$= 5.25, respectively). Overall, we verify the interaction effects proposed, which means that interactivity moderates and promotes the effects of personalization on user behavior for intentions to continue participating and service involvement.

Take in Figures 4 and 5

Conclusions

This paper has addressed how to foster customer involvement and participation in creating and delivering services. These topics have become very important because of the advances in ITs that have led to the emergence of new tools, applications and information services that substantially influence customer behavior. Our findings have corroborated the importance of the interactivity and personalization experienced during the purchase of a new information service known as the news-on-demand package. Using IPTV as a purchase context, we have demonstrated the effect of these factors on customer involvement, participation and intentions to continue participating. Interactivity promotes communication among customers who are not directly involved in the commercial transaction and whose opinions are not conditioned by the

achievement of financial benefits. Personalization allows customers to play an active role in the creation process, so it blurs the division between customers and producers. Moreover, the influence of these two factors on customer behavior and attitude is greater when they are considered simultaneously, due to the moderating effect of interactivity on personalization.

Our research concludes that, if customers can personalize the service and interact with others who have the same interests, they will become more involved with the service purchased and will be more willing to participate with the firm. Personalization and interactivity allow customers to contribute with information and value in the production, consumption and delivery of services and, thus, to become important actors in the global creation process.

Theoretical implications

Our contribution to the literature is threefold.

First, our study demonstrates the convenience of analyzing involvement and participation together in order to understand customer collaboration better. As we said before, the literature considers that involvement and participation during the purchase are interrelated variables which, together, give a wider perspective on the new role of the customer. However, considering the two variables together requires a clear conceptual distinction between them to avoid overlapping and measurement issues. The interplay between attitudes (involvement) and behavior (participation) needs to be addressed to explain customer collaboration effectively.

Second, we confirm the importance of the purchase context from a participation and socialization perspective, studying the influence of personalization and interactivity during the purchase experience. Service marketing literature has analyzed the consequences of customer participation and involvement on service quality and other performance outcomes. Nevertheless, the drivers of customer involvement and participation have not been extensively addressed. We have centered on the effect of personalization and interactivity, considering the importance of

technology to enhance these activities and, thus, empower customers. We conclude that the purchase context is important for firms to facilitate and promote customer collaboration.

Third, our results verify the importance of social interactions in moderating and reinforcing the effect of personalization on involvement and intentions to participate. Improved interactivity leads to a greater effect of personalization on customer behavior, so research should consider the theoretical relationship between the two factors. Embedding personalization within the socialization processes between customers better explains why customers will continue to participate with the firm.

Managerial implications

Considering the purchase process in a participation context has several implications for firms in terms of managing services and purchase platforms. Facilitating personalization and interactivity during the service encounter is decisive for co-creating value with customers and, consequently, offering a better service.

First of all, firms should know that customer purchase behavior is not exclusively derived from the customer's relationship with the firm, but also from the connections established with other customers. Interactivity enables customers to talk about the information and services offered by the firm, as well as about their experiences. Therefore, it is important for firms to promote the establishment of dialogues and relations between customers in order to stimulate fruitful relationships. Firms should include interactive tools like forums, blogs and social networks which contain facilities for customers to share their opinions about the service and the purchase experience. From the information exchanged through these tools, customers improve their knowledge, enhance their participation, increase their involvement with the service purchased, and strengthen their intentions to continue participating.

The personalization developed by customers during the purchase experience increases their current and future participation in the design of the service, as well as their involvement.

The fact that customers can select between different options to create the service that they are purchasing generates a greater affinity and proximity to the resulting service because it is more adapted to their expectations. Consequently, firms should facilitate personalization tools in order to promote customer creativity and participation in different environments. Several firms are already implementing personalization activities, both online and offline, that allow the customer to have an active role in the production process (see, for example, *Build a Bear* - http://www.buildabear.com/ - or *myAdidas* - http://www.adidas.es/-).

Moreover, the interplay of personalization and interactivity tools is important to foster involvement and intentions to participate, so firms should consider including both kinds of tools together in their online purchase environments. Although not all the customers may want to personalize the product or service at first, their interactions with others that do so may motivate them in this direction. Personalization may not attract new customers but, based on user involvement theory, the personalization process can improve customer satisfaction and loyalty, favoring long-term relationships with the firm (Tam & Ho, 2006).

Finally, we should highlight that ITs have fostered the possibilities offered by personalization and interactivity and have opened up a broad range of opportunities for customer involvement and participation in services, not only in the online but also in the offline environment. While, in the online environment, understandably, ITs provide new services that enable customers to generate, acquire and transform information, in the offline context as well, delivering services is more influenced by ITs than ever. Services such as fitness centers, entertainment and art venues, and health services, among others, are benefiting from technological possibilities. Using ITs, these services can personalize their relationships with the customer, expand them through different environments like the Internet, and facilitate the creation of customer communities, managing information related to the customer's experiences more effectively.

Limitations and future lines

We should mention that our study is focused on a specific online environment and on a captive information service that is consumed in the same environment through which it is purchased. News-on-demand is an intangible product, involving very different personalization choices to those of tangible products. In future research, it would be interesting to analyze several products, both tangible and intangible, and to compare the influence of interactivity and personalization on the customer's perceptions and purchase behavior. Moreover, as ITs can be applied to a broad range of offline services, it would be interesting to explore how interactivity and personalization influence customer participation and involvement in the offline environment. The combination of ITs and offline services that are consumed in the same place as they are purchased may give another perspective of the participation phenomenon. In these cases, ITs are not needed to perform the exchange, but may foster customer collaboration with the firm and increase the global value of the experience. ITs increase communication among the parties involved in the process before, during and after the exchange, and also facilitate service personalization through information dissemination and collection. Thus, we would like to study the influence of personalization and interactivity on customer involvement and participation in the offline environment.

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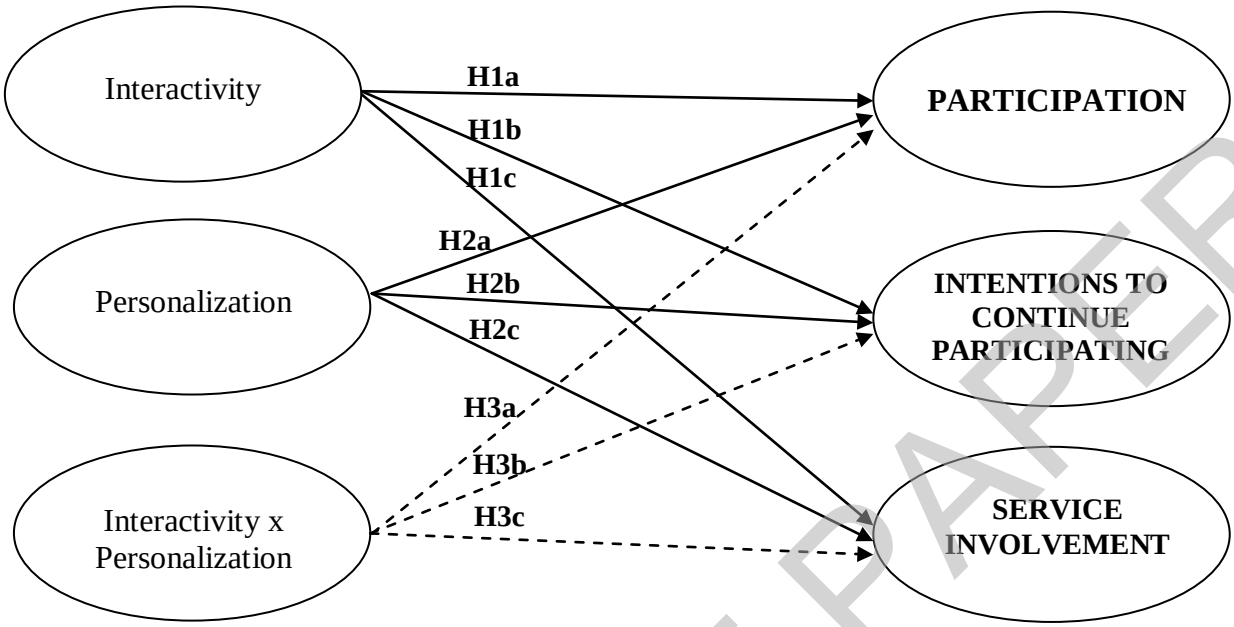


Note: The factor Interactivity x Personalization represents the moderating effects of interactivity on personalization

Figure 1. Research model

Figure 2. Screen shot of the menu to configure the IPTV platform

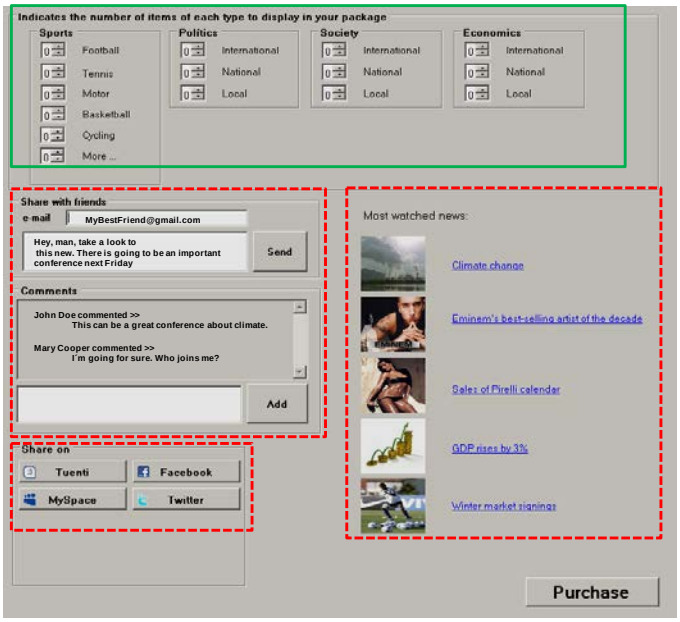
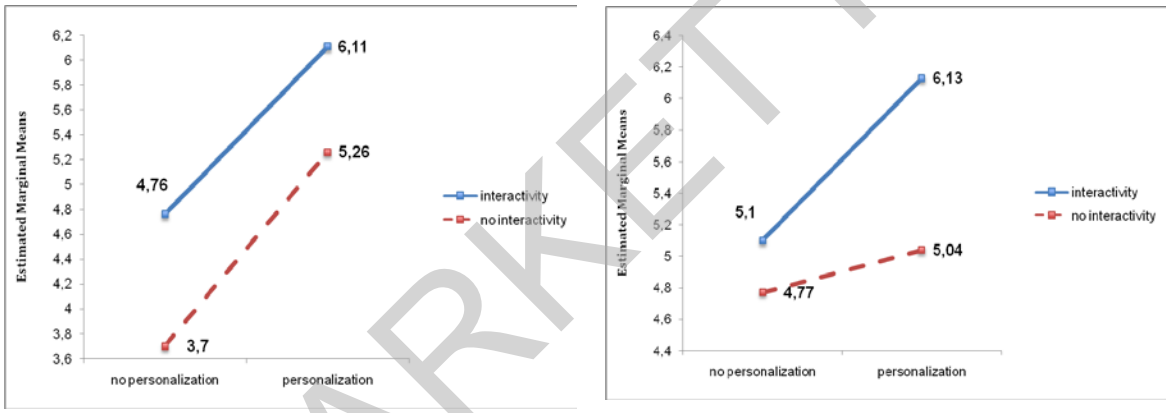


Figure 3. Screen shot of the IPTV interface with personalization and interactivity features



Participation **Intentions to continue participating**

Figure 4. Effects of personalization and interactivity on participation and intentions to continue participating

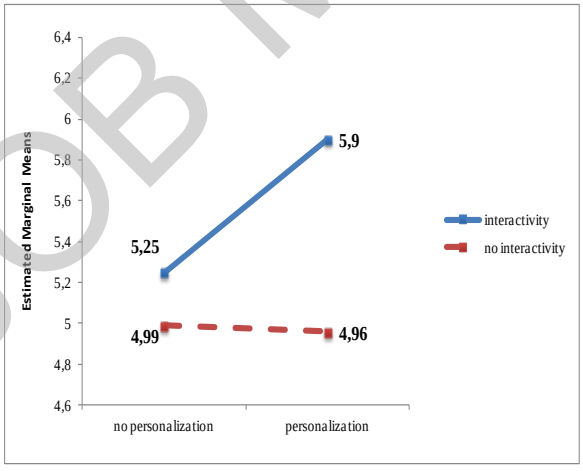


Figure 5. Effects of personalization and interactivity on service involvement

Table 1. Research streams about customer participation in marketing

RESEARCH STREAM	REPRESENTATIVE WORKS	STUDIED VARIABLES
1/ Firm's perspective on customer participation	Bateson (1985), Lovelock & Young (1979), Mills & Moberg (1982)	- Productivity - Economic gains
2/ The customer as a "partial employee"	Bowen (1990), Fodness, Pitegoff & Sautter (1993), Goodwin (1988), Lengnick-Hall (1996), Mills & Morris (1986)	- Self-service propensity - Perceived quality - Customer partial employee's performance level - Satisfaction
3/ Customer participation as a key strategic issue in contemporary marketing	Bendapudi & Leone (2003), Dabholkar (1990), Firat & Venkatesh (1995), Prahalad & Ramaswamy (2004), Vargo & Lusch (2004), Wind & Rangaswamy (2001), Xie, Bagozzi & Troye (2008)	- Coproduction - Co-creation of value - The "customizing" customer - Experience - Perceived value - Co-created value

Table 2. Measurement of the variables

FACTORS AND WORKS	ITEMS
PARTICIPATION Bendapudi & Leone (2003), Dong et al. (2008), Merle et al. (2008), Zolfagharian & Sheng (2012)	PART_1: I have participated in the process of creating my own news-on-demand package
	PART_2: During my purchase I have participated in creating a news service
	PART_3: This application gives me lots of autonomy in creating the news-on-demand service I wanted
	PART_4: I was able to give free rein to my creativity
INTENTIONS TO CONTINUE PARTICIPATING Chiu et al. (2012), Dong et al. (2008), Kuo & Wu (2012)	INTEN_1: Given the chance, I would like to collaborate in creating services in the future
	INTEN_2: I would like to participate in defining the services that I buy through IPTV
	INTEN_3: Given the opportunity, I would like to use design applications while buying through IPTV
SERVICE INVOLVEMENT Halepete et al. (2009), Kim et al. (2007), Russell-Benett et al. (2007, Shang et al. (2006), Zaichkowsky (1985)	How would you describe news-on-demand packages?
	INV_1: Non innovative (1) ... Innovative (7)
	INV_2: Exciting (1) ... Unexciting (7)
	INV_3: Unimportant (1) … Important (7)
	INV _4: Boring (1) … Interesting (7)
	INV _5: Worthless (1) … Valuable (7)
	INV _6: Not needed (1) ... Needed (7)
	*INV_7: Useless (1) … Useful (7)**

* Item deleted in the filtering process

Table 3. Confirmatory factor analysis

Variable	Item	Factor loading	Robust t-value	R^2	Composite reliability	AVE	Cronbach's α
PARTICIPATION	PART_1	.863	15.132	.745	.885	.662	.934
	PART_2	.808	13.374	.654			
	PART_3	.906	15.908	.821			
	PART_4	.964	19.083	.929			
INTENTIONS TO CONTINUE PARTICIPATING	INTEN_1	.692	10.989	.478	.895	.739	.863
	INTEN_2	.875	12.482	.766			
	INTEN_3	.957	14.723	.916			
SERVICE INVOLVEMENT	INV_1	.633	8.782	.401	.884	.720	.913
	INV_2	.835	14.933	.697			
	INV_3	.892	15.737	.796			
	INV_4	.869	13.426	.756			
	INV_5	.841	13.273	.707			
	INV_6	.733	11.526	.537			
Confidence interval	PART-INV		(.487 - .783)	INV-INTEN		(.465 - .689)	
	PART-INTEN		(.380 - .644)				

Table 4. Correlations between dependent variables

	Interactivity					
	Presence			**Absence**		
	PART	INTEN	INV	PART	INTEN	INV
Personalization: Presence						
Participation (PART)	_	.389**	.389**	_	.619**	.622**
Intentions to participate (INTEN)	.389**	_	.513**	.619**	_	.681**
Service involvement (INV)	.389**	.513**	_	.622**	.681**	_
Personalization: Absence						
Participation (PART)	_	.605**	.610**	_	.313*	.581**
Intentions to participate (INTEN)	.605**	_	.525**	.313*	_	.318*
Service involvement (INV)	.610**	.525**	_	.581**	.318*	_

Table 5. Multivariate and univariate results

	Multivariate Results			Univariate Results									
Independent Variables	Wilk's λ	F	p	Participation				Intentions to participate			Service Involvement		
				df	MS	F	P	MS	F	p	MS	F	p
Interactivity	**.857**	**10.693**	**.000**	1	**44.935**	**28.926**	**.000**	**25.000**	**16.534**	**.000**	**17.613**	**16.164**	**.000**
Personalization	**.719**	**25.153**	**.000**	1	**104.65**	**67.368**	**.000**	**20.947**	**13.854**	**.000**	**4.730**	**4.341**	**.039**
IxP	**.935**	**4.436**	**.05**	1	0.553	0.356	.552	**7.099**	**4.695**	**.031**	**5.693**	**5.225**	**.023**
Error				195	1.553			1.512			1.090		

Table 6. Descriptive statistics of the dependent variables

		INTERACTIVITY		PERSONALIZATION	
		Presence	Absence	Presence	Absence
PARTICIPATION	**Mean (SD)**	5.44 (.125)	4.49 (.125)	5.69 (.125)	4.24 (.125)
INTENTIONS	**Mean (SD)**	5.62 (.123)	4.91 (.124)	5.59 (.123)	4.94 (.124)
INVOLVEMENT	**Mean (SD)**	5.58 (.104)	4.98 (.105)	5.43 (.104)	5.12 (.105)