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Social Identity for Teenagers: Understanding Behavioral Intention to Participate in Virtual World Environment

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Abstract

This study develops a framework for understanding user intentions and behaviors within a virtual world environment. The proposed framework posits that the intention to participate in virtual world is defined by a person's 1) social identity, 2) attitude toward using the service, 3) subjective norms, 4) attitude toward advertising on the service and 5) enjoyment. The proposed model is tested using data (n=319) from members of the virtual world environment. The results support the multidimensional view of social identity and show a strong positive association between social identity and intention and social identity and behavior, and further, confirm the intention-behavior link. Moreover, the results indicate that social identity outweighs the significance of a person's attitude and relevant subjective norms in explaining intention and behavior. The results also indicate that enjoyment strongly explains both ease of use and attitude.

Keywords: Social identity, Virtual world, Experiential service, Enjoyment, Intention

1 Introduction

During the past few years, we have witnessed a remarkable increase in the number of users in virtual worlds. According to KZero [54], there were 1.921 billion registered users in virtual worlds in the first quarter of 2012, more than triple the number of users in 2009. The largest segment of users (802 million) is between the ages of 10 and 15 [54]. Despite the growing popularity of virtual worlds, there is no agreement on the definition and/or typology of virtual worlds [20], [71]. The numerous contextual descriptions provided by academics, industry professionals and the media, have further complicated agreement on a common understanding about virtual worlds [91]. One of the earliest definitions of a virtual world was that of Schroeder [74] p.25 who defined the virtual environment or virtual reality as “a computer-generated display that allows or compels the user (or users) to have a sense of being present in an environment other than the one they are actually in, and to interact with that environment.”

Years later, Koster [52] suggests a definition which contains many essential characteristics of a virtual world: “a virtual world is a spatially based depiction of a persistent virtual environment, which can be experienced by numerous participants at once, who are represented within the space by avatars.” Castronova [25] adopts a more technologically oriented viewpoint and defines virtual worlds as “crafted places inside computers that are designed to accommodate large numbers of people.” Building on the definitions provided by Bartle [16], Koster [52] and Castronova [25], and including an emphasis on the people and their social network, Bell [20] defines virtual world as “A synchronous, persistent network of people, represented as avatars, facilitated by networked computers.” Against this backdrop, social networking sites, such as Facebook and LinkedIn are not virtual worlds. Although not without its critics [19], social networking sites (SNSs) are defined as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” [22]. Thus, SNSs constitute virtual communities which have persistence, but no sense of synchronous [20].

Keeping the Bell's [20] definition of virtual worlds in mind, massively multiplayer online role-playing games (MMORPG) like World of Warcraft or Ultima Online are virtual worlds. This applies also for MMO games. However, there is a discussion about whether a distinction should be drawn between game-based worlds and non-game worlds. Some researchers [51], [77] argue that virtual worlds are essentially non-game environments where divergent games can be present but are not the defining characteristics of the world. Instead, MMORPGs are subject to precise gaming rules, and therefore, they are essentially games. Even though, some MMORPGs provide opportunities for social networking, the game element is central to their functioning [47].

The growing number of Internet users and popularity of virtual worlds mean that more and more people are becoming involved in different types of virtual environments. This also provides new opportunities for businesses to market products and services in these virtual worlds [38], especially if it can be exposed that product placements in virtual worlds are more effective at generating sales and brand loyalty than static marketing channels, such as print and web-based advertisement [92]. Even though, little is known how to effectively market to virtual world participant through avatar-oriented activities, organizations and marketers should consider the online opportunities of marketing to the inhabitants of virtual worlds, as the avatars of users represent prospective targets of current and future business.

This raises a number of interesting research and practical questions how companies can market themselves, their products and services within virtual world's environment by making sense of the unique features offered with this new medium [92]. Previous research has investigated online interaction in different types of virtual communities, such as text-based [10] and network- and small group-based virtual communities [11], [30]. On the other hand, research has also investigated several high-interactivity online venues (real-time chat systems, web-based chat rooms and networked video games), and low-interactivity online venues (e-mail lists, website bulletin boards and usenet newsgroups) [13]. Participation has also been examined in special contexts like software user groups [12], and from educational perspectives [93].

Viewing the phenomenon through the lens of social psychology, this study examines the underlying motives of users for participating in virtual worlds, utilizing an applied version of the frameworks presented by Dholakia et al. [30] and Bagozzi and Dholakia [11], [12]. These frameworks were developed to examine user motivations and behaviors in virtual worlds, and are related to the model of goal-directed behavior [69]. Participating in virtual worlds is perceived as intentional social action influenced by several social determinants such as attitude, subjective norms, perceived behavioral control, enjoyment, entertainment value, ease of use and social identity.

In the current study, authors adapt the Bell's [20] view of virtual world, which builds on synchronicity, persistence, network of people, avatar representation and facilitation of the experience by networked computers. The authors investigate the users of 2-D virtual world called Moipal aimed at users between the ages of 10 and 15. Moipal is not a MMORPG in a sense that users' story or narrative unfolding within the strict constraints of the rules and goals set by the designers. Instead, Moipal has the elements of both a fictional and physical world and exists primarily as a place for social interactions to occur. However, Moipal is not based on a social platform like Facebook, and therefore it is not a social game. Authors identify Moipal as a virtual world environment which can be classified within the broad

domain of massively multiplayer online games (MMOG). It can also be tagged with the label multi-user virtual environment (MUVE) [62]. Moipal offers its players a virtual world environment to do everything from playing mini-games to meet new and existing virtual friends, to exploring many public spaces available to them. Moipal experience consists of many parts, which are all inextricably linked. Apparently, The Sims Online [60] has been a role model for Moipal. Moipal was launched in October 2007. There were around 120 000 users in Moipal at the end of the year 2008. Moipal was shut down in September 2011.

Moipal is free to play, but registration is mandatory. At the initial sign-up, each player selects the look and style of an avatar, called Pal, from a wide range of options, including gender, hair and skin color, clothing, facial characteristics and body type. Pals are automatically given a personal *home* upon sign-up and invited to personalize it with a variety of furniture and accessories like rugs, lamps, posters and plants. Pals' residences are located in the virtual world called Pal City. The City provides Pals dozens of different places to visit and opportunities to carry out wide variety of tasks. Pals can visit, for instance, a horse stable, library, cinema, film studio, radio station, city hall, restaurants, museums, art gallery, and holiday resort. By completing tasks related to different places, Pal can earn Pal-money to buy new furniture or clothing from divergent shops located in a shopping mall called Pal Store. The tasks are extremely diverse, ranging from eating pizza at Joe's pizzeria, dancing at Cube Club, having snowball fights in Iceland, training karate at Dojo to feeding dinosaurs at Museum of natural sciences. For nurturing social interactions, Moipal provides communication opportunities such as chatting and sending PalMail to others. The number of friends is not limited in Moipal. Many Pals also create a group or community around a certain topic such as horse riding, rock star or fashion. Like minded friends were then invited to the group. Non-members are able to request invitation by MoiMail.

Besides the parties Pals could arrange for their friends, plenty of attractive events are organized around Pal City. These include a fashion event at the beach, silent movie festival at Kino Lumiere (cinema), Cross stitch exhibition (pixel art created by Pals) at Art Gallery 44, and Palympics sport events in sport field. Pals could play several mini-games in Moipal, such as Moipal Racing where a player can drive a car with a side scrolling view. The car can be driven across a track and the driver has to avoid hitting pumpkins and other obstacles on the track. Other mini-games include Karate, MoiBand (several instruments), Jump rope, PalPing (ping pong), Locomotion (dancing), MoiPets (virtual dogs), just to mention a few.

In the next section we review the relevant literature to support the development of our hypotheses. This is followed by a discussion of the study's methodology. We then continue with the presentation of the results. Finally, we draw conclusions from the study, outline its main limitations and offer ideas for further research in this area.

2 Goal-directed Behavior vs. Experiential Service Use

Although Bagozzi and Dholakia [9] state that consumer behavior is predominantly goal-directed because goods and services are purchased with a certain goal in mind, it is important to note that not all consumer behavior is based on this utilitarian and information-processing view. As noted by Holbrook and Hirschman [39], using the information processing perspective to explain consumer behavior might not always be the appropriate choice in settings which include playful leisure activities, such as gaming [67]. According to this experiential view of consumer behavior, consumption is viewed as a subjective state of consciousness that includes various symbolic meanings and hedonic responses. As pointed out by Holbrook and Hirschman [39], it is important to recognize and also to contrast the two views of consumption: the information-processing and the experiential view. As this paper is interested in volitional behavior in an experiential service setting (gaming) in which consumer behavior is driven by pleasure-seeking, enjoyment and fun, intrinsic motivational factors such as enjoyment are expected to have a stronger effect on intention and behavior than extrinsic motivational factors like perceived utility.

Prior research has modeled participation in virtual communities and the associated behavior from the viewpoint of goal-directed behavior [10]-[12], [47], [69] which suggests that desires predict intentions, and the traditional antecedents of the theory of planned behavior (TPB), namely attitudes, perceived behavioral control and subjective norms influence intention through desires too. The model of goal-directed behavior [69] has since been revised and applied in many studies. In this case, we consider applications that discuss intentional social action in the context of groups [8], virtual communities [10], [30] and online venues [13].

Nysveen et al. [67] p. 336, who studied antecedents to mobile service usage, argue that experiential services are characterized by "ritualistic orientation and hedonic benefits derived from the use of the service, whereas goal-directed services are characterized by instrumental orientation and utilitarian benefits related to the use of the service". On this basis, we now present a framework combining aspects of goal-directed behavior and experiential service use.

3 Conceptual Model and Hypotheses

Building on the research on both goal-directed behaviors [10]-[12], [30] and experiential service use [67], we propose the following framework (Figure 1) to capture the antecedents of intention and behavior in the context of virtual worlds characterized by hedonic pleasure-seeking motives. In the next sections we discuss the model in more detail, develop the hypotheses and review relevant literature to support them.

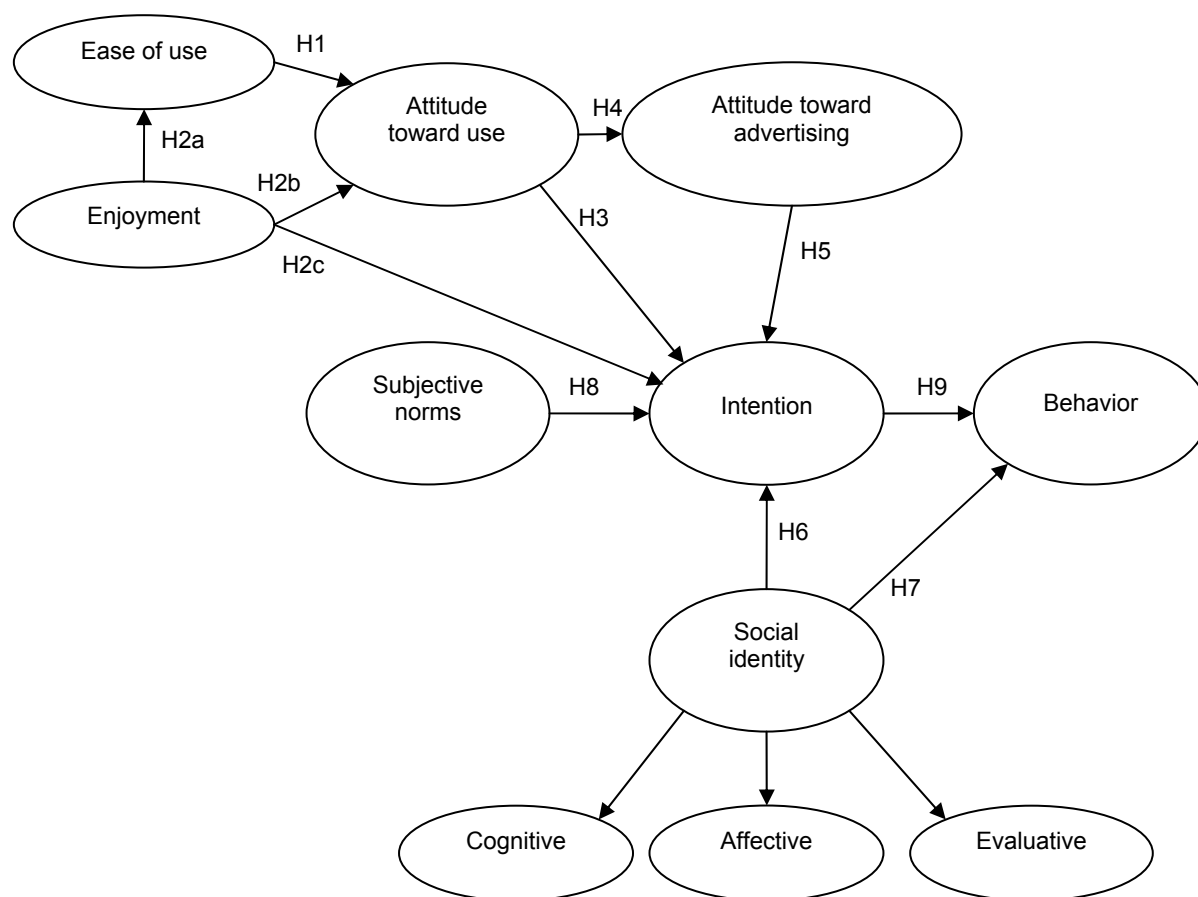


Figure 1: Conceptual model and hypotheses

3.1 Ease of Use

Perceived ease of use refers to the degree to which a potential user of a certain technology expects the target system to be free of effort [28], [29]. Ease of use is one variable introduced by Davis [28] under the technology acceptance model (TAM), an adaptation of the theory of reasoned action [34]. However TAM focuses precisely on explaining purposive behavior in the context of technology use. TAM also posits that two beliefs, perceived usefulness and perceived ease of use, influence computer acceptance through attitude in the following sequence: first, the design features of a certain technology affect a person's perceptions of its usefulness and ease of use. Consequently the person forms a certain attitude toward using the technology. Finally, attitude produces behavioral response, that is, actual system use.

The effect of perceived ease of use on information system acceptance and use has been studied extensively in the TAM research domain (for a review see [50]). Ease of use has been found to explain a considerable amount of the variance in attitude. In experiential service settings ease of use has been found to have a significant association with attitude toward use and intention to use, but its explanatory power is not very strong with regards to either [67]. In this study, the concept of ease of use is a somewhat complicated because ease-of-use may not exactly reflect the motivation of online games users. Authors acknowledge that "without usability no one can play a game; make it is too usable and it's no fun" [55] p. 319. However, in the case of online gaming acceptance, Hsu and Lu [42] found that ease of use appeared to be the key determinant to predict online game play instead of usefulness. In addition, Hsu and Lu [43] have shown that perceived ease of use appears to have significant effects on both perceived enjoyment and preference to participate in online game communities. They found in their study that easy-to-use interface enhance enjoyment and encourage people to re-participate. On the contrary, difficulties of use make people resist

and thus lose the loyalty toward the community. This stresses the need to consider ease of use as a critical variable when studying intention to participate in virtual world environment. On this basis we hypothesize that:

H1: Ease of use is positively related to attitude toward use.

3.2 Perceived Enjoyment

Perceived enjoyment (PE) is defined as the extent to which the activity of using information systems/technology is perceived as enjoyable in its own right, aside from any performance consequences [29]. Enjoyment is a strong determinant of attitudes, intentions and behavior especially in hedonic system contexts [78]. Nysveen et al. [67] show that enjoyment is an important motive for using experiential services such as mobile entertainment. In their study, enjoyment had a strong positive association with attitude toward and intention to use mobile services. They also proposed that enjoyment is a stronger motivator for using experiential mobile services (like gaming) than for the intention to use goal-directed mobile services (like payments). Previous studies have also shown that perceived enjoyment has a positive effect on the attitude towards using social virtual world (Habbo) [66]. In addition, Shin [76] identified enjoyment as predicting attitude toward the user acceptance of virtual world.

Previous research has examined the causal links between perceived ease of use (PEOU) and perceived enjoyment [78]. However, the literature has not been consistent with regards to causal relationships, as numerous studies have proposed that perceived enjoyment is either an antecedent of ease of use [1], [90], [94] or a consequence [29], [46], [63], [84]. Sun and Zhang [78] propose that in utilitarian settings, in which information systems or services aim to provide instrumental value, like the information needed to perform a task, to users, the PE→PEOU causal direction outweighs the PEOU→PE direction. They state that the direction of this causal path may be reversed in hedonic systems or services given their differences to utilitarian systems. In addition, in hedonic information systems which provide self-fulfilling values to users, enjoyment has been found to be a stronger determinant of intentions than perceived ease of use [7], [84]. On this basis we propose that:

H2a: Enjoyment is positively related to ease of use.

H2b: Enjoyment is positively related to attitude toward use.

The relationship between enjoyment and intention is supported by many studies, particularly with reference to hedonic information systems [1], [46], [81], [84]. Davis et al. [29] argue that users who get enjoyment from using an information system are more likely to form behavioral intentions compared with other users who do not experience as much enjoyment. Perceived enjoyment is also shown as a significant predictor to the intention to use virtual worlds [66], [75]. Therefore, we propose that:

H2c: Enjoyment is positively related to intention.

3.3 Attitude Toward Use and Attitude Toward Advertising

In general, attitude toward a certain behavior such as using a system or service is positively related to intention to engage in that behavior [2]. In computer-mediated environments, many studies state that attitude towards using a system has been found to be the strongest determinant of intention to use that system [28], [67]. With respect to social communication behavior online, Chang and Wang [26] show that a more positive attitude towards the use of online communication tools corresponds to a greater behavioral intention to use them. Their results show that behavioral intention is influenced by perceived usefulness, flow experience and attitude towards use. The factors jointly explain 80 percent of the total variance in behavioral intention, of which attitude alone explains 56 percent. In the same vein, Nysveen et al. [67] propose that attitude toward using mobile services is a strong determinant of intention and usage. In addition, Moon and Kim [63] argue that attitude toward using the Web has a strong influence on behavioral intention. On this basis we propose that:

H3: Attitude toward use is positively related to intention to use.

Attitude toward advertising can be defined as “a learned predisposition to respond in a consistently favorable or unfavorable manner to advertising in general” [57] p. 53. Research on attitude toward advertising has concentrated mainly on three areas: attitude towards ads [57], [59], perceptions of ads in general [33] and brand attitude [58], [64]. Scholars have shown increasing interest in attitudes toward online advertising since its emergence on the Internet. Studies have investigated, for instance, the perceived value of Web advertising [32], different online advertising formats [24] and attitudes toward online advertising [73]. Attitudes toward online advertising have been found to be related to the informativeness and enjoyment of the advertisements [32], [73]. Attitude toward advertising is a strong determinant of, for instance, purchase intentions [57], [59]. Attitudes toward advertising are also found to determine behavioral responses in online [24] and mobile environments [48], [82]. The empirical evidence from prior studies about advertising in virtual worlds is virtually non-existent. However, some studies are conducted in social networking sites. For instance, Kelly et al. [49] explored teenagers' attitudes toward advertising in online social

networking environment. In their study, many participants indicated that advertising on their online social networking sites was acceptable, because it kept the use of site free of charge. This may apply also for advertising in virtual worlds. Thus, we suggest the following hypotheses:

H4: Attitude toward use is positively related to attitude toward advertising.

H5: Attitude toward advertising is positively related to intention.

3.4 Social Identity

Social identity theory is a social-psychological perspective developed by Tajfel and Turner [79], [80]. It defines how people classify themselves and others into various social categories. The social classification comprises two functions. The first function gives the means for a person to define others by cognitively segmenting and ordering the social environment surrounding them. Second, social classification helps individuals to define themselves in the social environment [6].

Originally, the model of goal-directed behavior [69] included only one social variable, namely subjective norm. However the construct of social identity was added to the model by Bagozzi and Dholakia [10]. The purpose in adding the variable was to make the model suitable for examining group actions. Dholakia et al. [30] state that social identity captures the main aspects of the individual's identification with the group in the sense that the person comes to view himself or herself as a member of the community and feels that he/she belongs to it.

Bagozzi [8] states that social identity evolves through self-categorization processes that define how members think and feel about themselves, how other in-group and out-group members are perceived and how one acts in relation to in-group and out-group members. Bagozzi divides social identity into three components: self-categorization, affective commitment and group-based self-esteem. These were later re-defined into cognitive, affective and evaluative social identity [11], [12]. Cognitive social identity refers to self-awareness of membership in a social group; self-categorization is related to affective social identity that presents the emotional feeling of belonging within the group, while evaluative social identity refers to a person's positive and negative value connotation related to group membership, that is, collective self-esteem. Research has tested the validity of these measures [14], [21].

Dholakia et al. [30] completed a study of social identity in the context of network- and small group-based virtual communities. Their model tested the motivational antecedents and mediators of group norms and social identity forms (cognitive, affective and evaluative). They hypothesized that higher levels of value perceptions lead to a stronger social identity regarding the virtual community. The results of their study supported the hypothesis and revealed that purposive and entertainment value determined social identity in the relevant context.

Against this backdrop, we propose that social identity is comprised of cognitive, affective and evaluative social identity [11], [12] and hypothesize that:

H6: Social identity is positively related to intention.

H7: Social identity is positively related to behavior.

3.5 Subjective Norms, Intention and Behavior

The second determinant of intention in the theory of planned behavior is subjective norm, which refers to the influence of one's personal community on the specified behavior [2]. Bagozzi and Dholakia [11] note that group norms might be an important aspect of social influence in small group brand communities, and therefore call for research on the effect of subjective norms on intention. In a virtual community context, the member's subjective norms affecting the intention to perform a certain behavior might be the approval or disapproval of the other members. According to Ajzen [3], normative beliefs are the antecedents of subjective norms. If a person assumes his or her referents think he or she should perform a certain behavior, the person will perceive social pressure to do so. On the other hand, if a person supposes his or her referents would disapprove of the behavior, the person will have a subjective norm applying pressure not to perform the behavior in question. Therefore subjective norm is a social factor that affects a person's intention to behave in a certain manner.

A number of studies indicate that the influence of peers on behavioral intention related to entertainment services is stronger than the influence of other subjective norms, such as parents or comparative referents [35], [61]. Peer influence has been a significant predictor of intention and behavior in the mobile entertainment services setting [17], [48], [72]. In addition, subjective norms have been found to predict user behavior in online games [42], blogs [41] and virtual communities [27]. Recent literature has also found subjective norms to be a significant factor in the user adoption of virtual worlds [18], [45]. As a result, we put forward the following hypotheses:

H8: Subjective norms, especially peers, are positively related to intention.

As Bagozzi and Dholakia [11] argue, in small group brand communities, social intentions are good predictors of group behavior. In addition, the extant literature rooted in the theory of reasoned action, the theory of planned behavior and their various extensions in both marketing and information systems research has confirmed the links between intention and behavior [2], [3], [11]-[13], [69], [88], [89]. On this basis we propose that:

H9: Intention is positively related to behavior.

4 Methodology

The data was collected from the users of a virtual world called Moipal. The survey was promoted via a banner advertisement in the gaming world. The players were encouraged to click on the banner and complete the questionnaire. As an incentive to answering the survey, the respondents were entered into a lottery for a gaming console. Notes on the questionnaire form advised respondents that the purpose of the study was to examine behavior and attitudes in the context of virtual communities. The respondents were asked to devote about ten minutes to completing the survey form. As regards the research ethics, the fact that a majority of the Moipal users are underage was taken into account when designing the survey. First, the survey was completely anonymous. To further ensure anonymity, Moipal user name, i.e. Pal's name, of the respondents was not requested at any point in the survey. Secondly, with the exception of the background questions on gender and age, no questions about the respondent's offline lives were included in the survey.

A total of 319 acceptable responses were received. In evaluating the response rate in this kind of online survey setting, we compared those who clicked the link to the number of completed questionnaires. By this count the response rate was close to 90 percent. A total of 86 percent of the respondents were females. The mean age of the respondents was 14.3 years. These demographics are in line with the demographics of the registered gamers. Potential nonresponse bias was also examined by comparing early to late respondents [5]. In terms of demographics, the groups do not differ from each other ($p < .01$) but in terms of the study constructs, the early and late respondents differ in their intention and behavior ($p < .01$). The results of the mean tests indicate that early respondents have higher intentions to use and are more active users of virtual worlds than late respondents. This finding was expected, as those who answer surveys first usually represent the most enthusiastic user groups. On this basis, we argue that as the survey reached the majority of the active users of the virtual world, as nonresponse occurs mostly among those who are less active gamers. Therefore, nonresponse bias should not be considered a major weakness of the study.

Potential common method variance bias was reduced and examined in various ways as suggested by Podsakoff, MacKenzie, Lee and Podsakoff [70]. First, at the data collection stage the respondents' identities were kept confidential, item ambiguity was reduced and the items were mixed in the questionnaire. Second, in the data analysis stage, we examined common method variance bias through Harman's (1967) one factor test and the partial-correlation technique. The one factor solution ($\chi^2 = 4451.6$ ($df=464$), $p < .00$; RMSEA = .146) was inferior to the hypothesized factor structure. In addition, the partial-correlation technique was used to further assess method bias. As a marker variable we used the item 'There should be no advertising in the virtual world'. Adding the marker variable to the model showed no effects on the observed relationships. On the basis of these two tests, it seems that common method variance bias is not a problem in this study.

4.1 Measurement Scales

All the items were measured on seven-point scales with a 'do not know' option. In some questions, a semantic differential scale was used instead of a Likert-type scale. In measuring attitudes, items were adapted from Bagozzi and Dholakia [10], [11]. Cognitive, affective and evaluative social identity constructs were all measured, with two items each adapted from Bagozzi and Dholakia [11] and Dholakia et al. [30]. In measuring ease of use we adapted a three item scale from Davis [28] and Davis et al. [29]. Enjoyment was measured with a three item scale taken from Nysveen et al. [67]. In measuring attitudes toward advertising in the virtual world, we used a semantic differential scale adapted from Ajzen [4]. Subjective norms were measured on a three item scale taken from Ajzen [4] and Bagozzi and Dholakia [11]. Intentions and behavior were both measured with items adapted from Bagozzi and Dholakia [10] and Dholakia et al. [30].

5 Results

A two-step approach was followed in testing the model. First, the evaluation of the measurement model was carried out using confirmatory factor analysis. Second, the testing of the structural model and an analysis of alternative models was carried out with SEM.

5.1 Measurement Model

The reliability and validity of the model were assessed with a confirmatory factor analysis (CFA) using LISREL8.7. Following Han, Kwortnik and Wang [37], we performed a normal transformation of the items using PRELIS to match assumptions of normality. In testing construct validity of the model, we evaluated both convergent and discriminant validity of the factor analysis.

5.1.1 Convergent and Discriminant Validity

The measurement model showed acceptable fit ($\chi^2 = 707.6$ (df=332), $p < .00$; RMSEA = .060; SRMR = .043; CFI = .987; IFI = .987; RFI = .971). The fit indices (Table 1) associated with the CFA exceeded acceptable thresholds [23], [44]. Only the chi-square value was problematic, but researchers have suggested looking at other fit indices like the RMSEA value if the chi-square test is not passed [31], [83]. The RMSEA statistic for the measurement model was below the cut-off criteria of .08, indicating a relatively close fit of the model [23].

Table 1: Confirmatory factor analysis

<i>n</i>	319	NFI	.976
χ^2	707.6	CFI	.987
df	332	RMSEA	.060
Attitude		Enjoyment	
CR / Cronbach's alpha	.93 / .93	CR / Cronbach's alpha	.95 / .95
Parameter Estimates Range	.83 - .90	Parameter Estimates Range	.89 - .97
Cognitive social identity		Attitude toward advertising	
CR	.87	CR / Cronbach's alpha	.93 / .92
Parameter Estimates Range	.80 - .95	Parameter Estimates Range	.82 - .95
Affective social identity		Subjective norms	
CR	.91	CR / Cronbach's alpha	.76 / .72
Parameter Estimates Range	.90 - .91	Parameter Estimates Range	.63 - .83
Evaluative social identity		Intention	
CR	.88	CR / Cronbach's alpha	.94 / .95
Parameter Estimates Range	.88 - .90	Parameter Estimates Range	.90 - .94
Ease of use		Behavior	
CR / Cronbach's alpha	.94 / .94	CR / Cronbach's alpha	.82 / .82
Parameter Estimates Range	.90 - .93	Parameter Estimates Range	.66 - .81

The Cronbach's alphas were larger than or equal to .72. Following Dholakia et al. [30], composite reliabilities (CR) were calculated for two item scales. All CRs were larger than the recommended cut-off criteria of .60 [15]. Therefore the scales show sufficient internal consistency. The indicators in the model loaded highly on their hypothesized constructs, and were significant. In addition, all the average variance extracted (AVE) values were over .50 (ranging from .61 to .76). On this basis, the confirmatory factor analysis shows acceptable convergent validity. Discriminant validity was assessed by looking at the correlation among the constructs (Table 2) and square roots of AVE values. All the AVE square root values were higher than the correlations among constructs, indicating acceptable discriminant validity [36].

Table 2: Correlations among the latent constructs

	ATT	CSI	ASI	ESI	ENJ	EOU	ADV	SUB	INT	BEH
ATT	1									
CSI	.57	1								
ASI	.76	.66	1							
ESI	.60	.50	.69	1						
ENJ	.83	.54	.73	.50	1					
EOU	.46	.37	.48	.35	.56	1				
ADV	.67	.47	.56	.47	.62	.41	1			
SUB	.75	.55	.70	.53	.73	.48	.59	1		
INT	.68	.46	.77	.60	.68	.43	.53	.62	1	
BEH	.65	.44	.77	.71	.63	.42	.53	.62	.77	1

5.2 Structural Model Assessment and Hypotheses Tests

The structural model fit was acceptable ($\chi^2 = 835.1$ (df=360), $p < .00$; CFI = 0.984; NFI = .972; NNFI = 0.982; IFI = 0.984; SRMS = .07; RMSEA = .064) [44], [23]. Hypothesized path loadings, their respective t-values and R² values are shown in Figure 2.

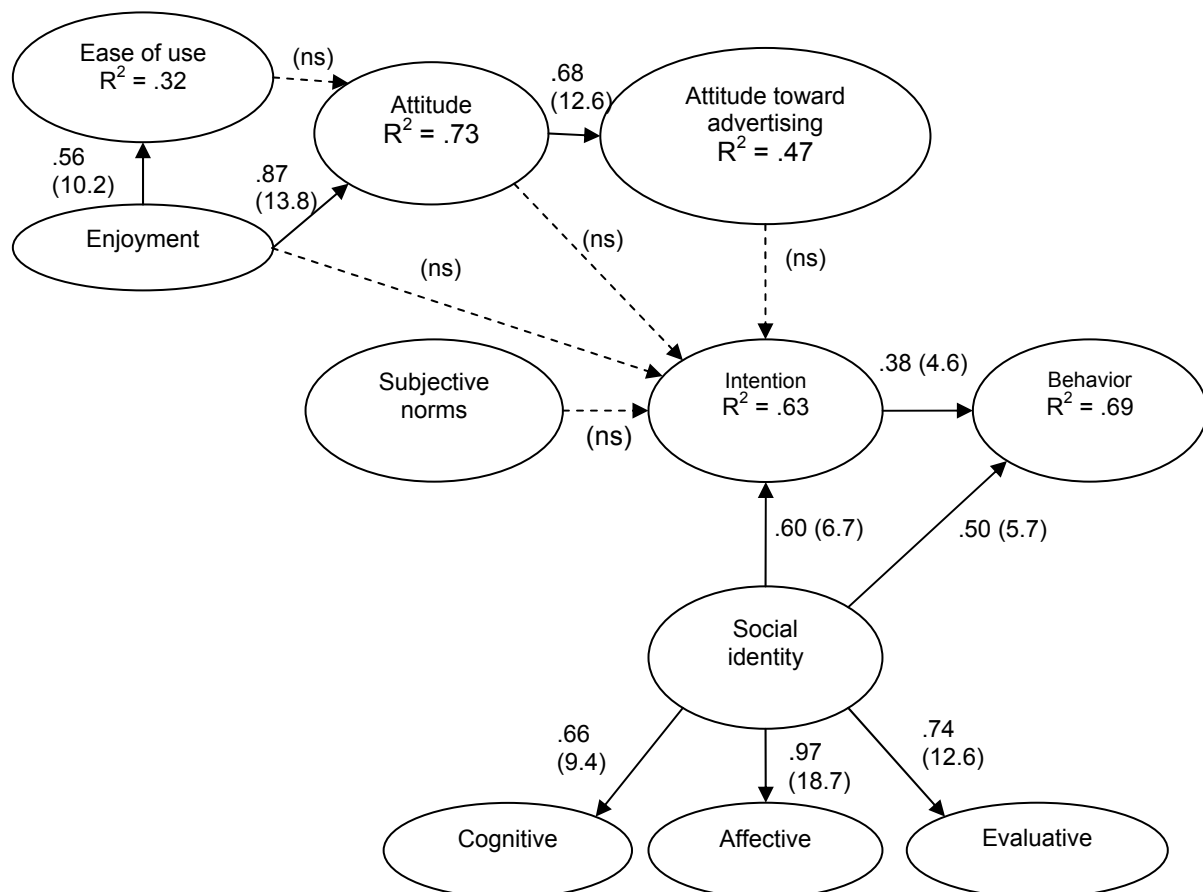


Figure 2: Structural model (t-values in parentheses; ns paths shown as dashed)

Of the nine hypothesized relationships, six turned out to be statistically significant. H1 contended that there is a positive and direct relationship between ease of use and attitude. No support for the relationship was found. There are two possible explanations for this. First, this insignificant path might be explained by the strong relationship between enjoyment and attitude. Studies have found that in experiential settings, enjoyment plays a stronger role

than ease of use in determining attitudes and behavioral intentions [67]. Second, in technology acceptance research the effect of ease of use on attitude and intention is often weaker than the effect of usefulness, as the effect of ease of use is mediated through usefulness [50].

In line with the literature [1], [85], [86], [94] we find strong support for H2a, which proposed that enjoyment is positively related to ease of use. To test the reversed path (PEOU→PE), a competing structural model was estimated. The competing model showed a significantly worse fit than the hypothesized model. On this basis it seems that, in experiential settings, perceived enjoyment has a significant impact on perceived ease of use, and not vice versa.

With respect to H2b, the path shows that enjoyment is positively related to attitude ($\beta = .87$, $t = 13.8$). This path is extremely strong and indicates that enjoyment is a stronger determinant of attitude than is perceived ease of use. This finding is supported by the literature which has found that enjoyment plays an important role in user acceptance of technology, especially in the case of hedonic systems [78].

There is no evidence to support H2c, which proposed that enjoyment is positively related to intention. This finding echoes Venkatesh et al. [90], who found no support for the direct relationship between perceived enjoyment and behavioral intention. However, that study supported the view that the effects of enjoyment are fully mediated by perceived usefulness and perceived ease of use.

H4, arguing that attitude toward use is positively related to attitude toward advertising, was supported ($\beta = .68$, $t = 12.6$). No support was found for H3 which argued that attitude toward use is positively related to intention to use. In contrast with the findings of prior studies on virtual world usage [45], [76] there was a non-significant effect of attitude in predicting the intention to participate into virtual world environment. However, Mäntymäki and Salo [66] made similar findings in their study conducted in social virtual world called Habbo Hotel. In the line with Mäntymäki and Salo [66], we suggest that a potential reason for a non-significant effect may be that since attitudes develop over time, their role is less salient with young people. Alternatively, it is also possible that intentions to use virtual worlds are driven by affective, emotional, impulsive or habitual factors rather than attitudes.

H5 contended that there is a positive and direct relationship between attitude toward advertising and intention to use. No support for the relationship was found. One potential explanation for this may be advertising avoidance. It may be that young people pay little or no interest in advertising in virtual worlds like they do in online social networking sites [49]. In such a setting, attitudes toward advertising may be less established and thus not exerting a strong influence on behavioral intention.

The next hypotheses proposed that social identity is positively related to intention (H6) and behavior (H7). Both hypotheses receive significant support from the data and are thus confirmed. We found no support for H8, which argues that subjective norms are positively related to intention. Finally, there is strong evidence supporting H9 which contended that intention is positively related to behavior. That path is strong and significant ($\beta = .38$, $t = 4.6$). The non-significant direct effect of subjective norms on intention to participate in virtual worlds was counterintuitive and contrary to recent literature which indicate that subjective norms are a significant factor in the user adoption of virtual worlds [18], [45].

However, the effect of subjective norms on intention has been found to be somewhat inconsistent [40], [87], [88]. For instance, Liang and Yeh [56] found in their study that subjective norm had no significant effects on the continuance intention to use mobile games. In addition, in their examination of e-commerce adoption Pavlou and Fygenson [68] did not find that subjective norms predicted either the intention to seek information online or the online purchase intention. Recently, using data gathered from 3265 survey participants in a social virtual world called Habbo Hotel, Mäntymäki [65] found no effect of subjective norms on continuous use intention on social virtual world. Interestingly, in his study, the research setting and profile of respondents were very similar to the current study. Respondents were female dominated and the majority of respondents were between the ages of 10 and 15. In the line with Mäntymäki [65], we suggest that a potential reason for non-significant effect of social norm may be the fact that the normative influence is not particularly salient in predicting virtual world use. Empirical studies have rather consistently found the influence of subjective norms to be less significant in the continuous phase of technology diffusion, or where the use of the technology is voluntary [53], [89]. Alternatively, as participants in virtual worlds can interact with other people, who just happen to be present in the virtual environment, while not knowing them in real life, and without necessarily forming personal relationships. As a result, anonymity inside the virtual world may reduce the salience of normative influence.

5.3 Competing Models

Two competing models were tested. Competing model #1 measured social identity as first order constructs. Competing model #2 was run without the social identity constructs.

5.3.1 Competing Model #1

Social identity was measured as first order constructs in the competing model. By doing this we were able to evaluate the significance of the social identity constructs, namely cognitive, affective and evaluative, in explaining intention and behavior. The competing model showed marginally improved fit (χ^2 difference = 40.3 (df= 352), NFI difference = .01; RMSEA difference = .01) to the hypothesized structural model. The competing model suggests that of the social identity constructs, affective social identity has the strongest positive association with intention ($\beta = .55$ $t = 5.77$). Evaluative social identity in turn has the strongest positive relationship with behavior ($\beta = .31$ $t = 4.49$), followed by affective social identity ($\beta = .31$ $t = 3.08$). No statistically significant positive associations between cognitive social identity and intention or behavior were found.

5.3.2 Competing Model #2

The second competing model was run without the social identity constructs (Figure 3). The model fit was acceptable ($\chi^2 = 553.3$ (df=220), $p < .00$; CFI = 0.983; NFI = .972; NNFI = 0.980; IFI = 0.983; SRMS = .07; RMSEA = .069). This model confirms the links between enjoyment and intention to use, attitude and intention and subjective norms and intention that were not established in the hypothesized model but were proposed in the literature [50], [63], [67]. Hence, our three models show that the addition of the social identity construct in technology acceptance models has an effect on the other established causal relationships, for example between attitude-intention and subjective norms-intention.

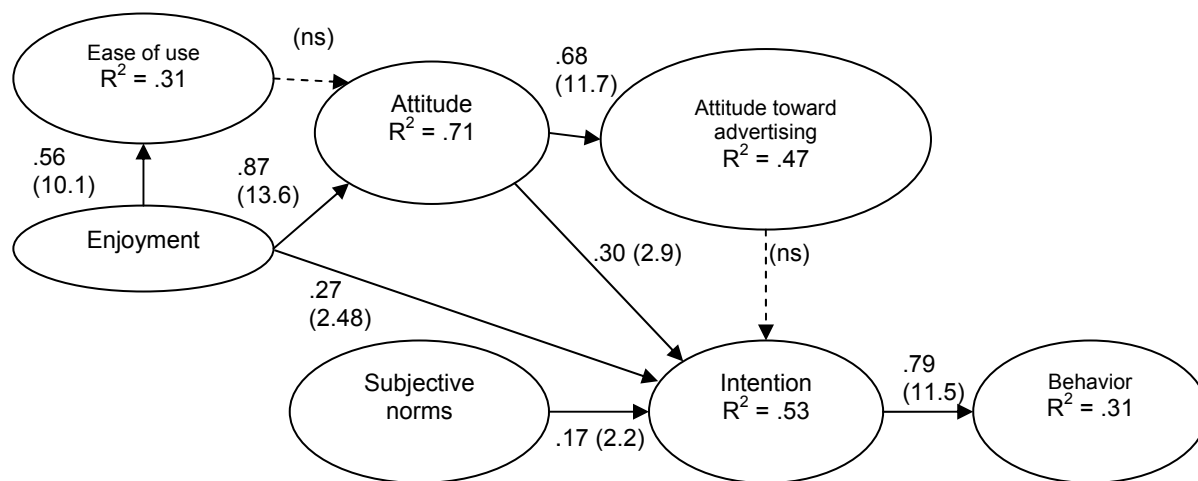


Figure 3: Competing model without social identity (t-values in parentheses)

6 Discussion

Consumers are increasingly using virtual online games to spend time and interact with other users. The objective of the study was to examine this issue from the viewpoint of users' intentions to use experiential virtual game services. The developed framework showed that social identity is the strongest determinant of intention and behavior in the study setting. Social identity outweighs the effect of attitudes, enjoyment and subjective norms in explaining intention to use a gaming service. Furthermore, the empirical test of the model successfully validated the multidimensional view of social identity. Our findings further indicate that affective social identity is the strongest indicator of a person's social identity outperforming the effects of cognitive and evaluative social identity. Affective social identity also has the strongest association with intention to use a game service and behavior.

6.1 Theoretical Contributions

In line with the theory [8], [11] the most notable finding of this study was that social identity is a strong antecedent of intention and behavior in the social virtual world context. Our findings also demonstrate that social identity outweighs the effects that enjoyment, attitude toward use and subjective norms have on intention. We showed that social identity consists of three components, and these functions are important in determining a person's intention and behavior in a gaming world. In line with the theory [11], the most influential component was found to be affective social identity, followed by evaluative and cognitive social identity. Previous studies have identified similar results. Bagozzi and Dholakia [11] found in their study of both Harley Davidson brand communities and non-Harley-driving club members that affective social identity was the strongest part of social identity, while the evaluative component was somewhat less strong and the cognitive component the least strong. They also noticed that customer communities organized around small groups resulted in greater social identification than similar communities of customers organized around a more general topic. In line with Bagozzi and Dholakia [11], then, it can be concluded

that customers in small group brand communities are more homogeneous in their psychographic characteristics and therefore have greater social identification. Thus, the strength of social identity in this study may be explained by the psychographic similarity of the examined virtual world participants. In summary, it seems that the finding that social identity is a strong antecedent of intention is more robust when interaction in the group is dense and/or organized around a specific theme or setting [11]-[13].

The strength of affective social identity indicates that a person's intentions to use virtual world may be predicted from his or her feelings of belonging to the group. Thus, if a person feels that he or she belongs to a group in the virtual world, he or she is more likely to visit that world. Affective social identity also showed a direct relation to behavior. This suggests that a person attached to the group to which he or she belongs, is more likely to perform direct behaviors. Evaluative social identity is another important antecedent of behavior. Therefore, the more important and valuable member of the group the person perceives him or herself to be, the more likely he or she is to perform behaviors in the group.

In contexts in which social identity is not present, behavioral intentions can be predicted from attitudes, subjective norms and enjoyment. In other words, these constructs become significant predictors of intention and behavior when social identity is not included in the models, or its role is minimal. This kind of situation may occur when a person interacts with people that he or she does not know very well, for example when joining a new discussion or interest group within the virtual world. Because the group members are just starting to get to know each other, social identity, and especially the emotional attachment to the group, has not yet strengthened. Instead the members' attitudes toward using the service and their perceptions of enjoyment in using it may be better predictors of whether they take part in discussions in the future. Subjective norms may also influence a person's intentions. Thus if the individual member of the group supposes that the other members think that he or she should, for example, take part in later group discussions, he or she will perceive social pressure to do so.

Another important finding is the role of enjoyment as an antecedent of attitudes. In line with the literature [1], [29], [46], [47], [63], [84], [90], [94] the links between enjoyment and ease of use and enjoyment and attitude were strong, suggesting that attitude is influenced by perceived enjoyment. Thus, a person who finds participating in the discussion group enjoyable, for example, is more likely to have a positive attitude toward the service.

The link between intention and behavior was strong in all model tests. This link has been studied extensively in the prior literature [3], [11]-[13]. This study confirms that intention is also an important antecedent of behavior in the social virtual world context.

6.2 Managerial Contributions

Our study shows that participation in virtual worlds can be predicted from intention which can, in turn, be predicted from social identity. The importance and dominance of social identity were prevalent and this construct outweighs all other constructs tested. Moreover, comparing this finding to the prior literature shows that the role of social identity as an antecedent of intentions seems to be higher when interaction in the group is dense and also organized around a specific theme or setting. From a managerial viewpoint, this implies that developers of virtual worlds should consider building theme-based virtual worlds which are designed to promote a particular type of content among a community or provide more opportunities for theme-based group formation among the participants of virtual worlds. We have identified the following important characteristics for developing virtual worlds and a person's social identity within them. First, developers of virtual worlds should promote the development of social identity among users, that is, a part of one's self-concept deriving from the knowledge, attached value and emotional significance of a certain membership of a social group [79]. In other words, developers should enable and encourage users to get to know each other, make friends and form communities and teams to work together on solving a problem or completing a certain task. To support the feeling of belonging within the groups, which refers to the affective side of social identity, the developers and administrators of virtual worlds should allow groups to interact without restrictions, for example by allowing the users to interact vividly both verbally (text-based) and nonverbally (gestures and expressions). In addition, a highly personalized graphical user interface and making it possible to design group logos, for example, would support social identity formation in the virtual world context.

The results can also be viewed in the light of marketing communications. The hypothesized link between attitude toward advertising and intentions was not significant, which indicates that a person's intention is not affected by his or her attitude toward advertising in the virtual world. From the advertising point of view this finding suggests that regardless of how disruptive, sensitive, harmful or beneficial advertising in the virtual world is, it has no direct relationship with intention to use the service. For advertisers, this finding could have both positive and negative implications. As the users do not change their intentions on the basis of advertising on the service, marketers may be launching ads perceived as disruptive. These kinds of ads can be, for example, pop-ups or floating ads. However, effective marketing in virtual worlds might just call for more sophisticated forms of advertising. As social identity was the central determinant of intention and behavior, marketing should support the development of the users' social identity by reinforcing the users' perceptions about their belonging to and importance in a group. This type of advertising may involve games that require players to form social groups. Another important finding for marketing communications is that perceived enjoyment affects both the perceptions of ease of use and attitude toward using

the service. Hence, marketers in virtual worlds may benefit from building enjoyable experiences for users. These kinds of advertising forms could be mini-games or other entertaining applications.

6.3 Study Limitations and Future Research

The empirical assessment of our framework should be interpreted in light of several limitations arising from our sample, common method bias and direction of causality. First, our study used a convenience sampling method which yielded a sample that is very much dominated by females (86 percent) and the young. One can expect that pre-teens' responses to surveys might be superficial. However, we found no biases in the answers due to respondents' age. Therefore the results cannot be generalized to other populations. To be more certain on possible answer bias, a comparison sample should be collected. Second, although common method bias was minimized, its impact on survey study results could only be completely ruled out if longitudinal data were used. Third, the direction of our causal relationships is based on theory rather than on mathematical caveats. However, we were able to also contribute to the discussion around the direction of causality between the constructs' enjoyment and ease of use.

The limitations and findings presented offer important opportunities for further research. We propose researchers further validate the links between social identity and the other constructs considered in the study. Specifically, prior studies have not conceptualized and therefore not tested the association between social identity and enjoyment, or social identity and attitude. As theories have not examined these aspects before, further work is needed to capture the links between social identity and the other constructs. Research has mostly concentrated on modeling the links between social identity and intention [11], [13]. In addition, we propose more research on the concept of social identity in experiential service settings. Previous studies have merely modeled social identity in the context of goal-directed behavior and not in experiential services including pleasure-seeking and hedonic user experiences [11], [13]. Finally, although this research has incorporated a variety of constructs into the developed framework, it seems that other factors may also exert an influence. As such, the exploration of differentiated service dynamics in alternative contexts seems a potentially fruitful avenue for research. Finally, it would be interesting to develop better understanding of how to grow the user base in virtual worlds. Especially, how can new users be attracted and what are the key issues at this stage? This calls for more research prior to exposure to the virtual world and prior to the social influence exerted by other users of the virtual world.

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