



# Digital natives in social virtual worlds: A multi-method study of gratifications and social influences in Habbo Hotel



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## ABSTRACT

Millions of teenagers today engage in social virtual worlds (SVWs). However, teenagers, often referred to as digital natives, represent an under-investigated group in the virtual world research and the Information Systems literature. To this end, we draw on developmental psychology and the uses and gratifications approach to examine teenagers' continuous SVW use with a multi-method approach. We first investigate role of psychological gratifications and social influences in predicting teenagers' intention to continue using Habbo Hotel. Thereafter, to gain a deeper understanding of their in-world activities, we triangulate our findings with a structured content analysis of the respondents' open-ended comments. Our quantitative and qualitative findings show that the intentions to continue SVW use are predominantly hedonically motivated. Moreover, we demonstrate that inside the platform users engage in social activities that are often associated with the hedonic experience. Finally, we discuss how these activities both extend and are distinct from digital natives' offline and online social interactions.

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## 1. Introduction

Engagement in virtual worlds (VWs) is increasing rapidly, particularly among young people. As of July 2011, VWs had 1.4 billion registered users, 70% of which were between 5 and 15 years old (kZero, 2012). Habbo Hotel, one of the largest social virtual worlds (SVWs) for teenagers, has a total number of registered users of over 273 million.<sup>1</sup> However, considering that the number of active users in Habbo Hotel has dropped from 11 million (Mäntymäki & Salo, 2011) to 5 million<sup>1</sup> in two years' time, and Second Life today has been estimated to have 600,000 active users<sup>2</sup> globally, converting the initial attraction to sustained engagement represents a major challenge in the VW business. Hence, the sustained use of the services, often referred to as continuance, is an important area of VW research (Barnes, 2011; Goel, Johnson, Junglas, & Ives, 2011; Jung, 2011; Mäntymäki & Salo, 2011; Merikivi, Verhagen, & Feldberg,

2013; Nevo, Nevo, & Kim, 2012; Schwarz, Schwarz, Jung, Perez, & Wiley-Patton, 2012; Zhou, Fang, Vogel, Jin, & Zhang, 2012).

Teenagers, often labeled as digital natives (Prensky, 2001; Jones, Ramanau, Cross, & Healing, 2010), constitute the largest VW user segment (kZero, 2012; Wasko, Teigland, Leidner, & Jarvenpaa, 2011). However, compared to their importance, this group has been under-represented in the VW literature thus far, as most studies focus on Second Life (see e.g. Animesh, Pinsonneault, Yang, & Oh, 2011; Goel et al., 2011; Nah, Eschenbrenner, & DeWester, 2011; Shelton, 2010) or World of Warcraft (Guo & Barnes, 2012), both platforms targeted at the adult audience. In particular, research on digital natives' sustained engagement in VWs has thus far remained scant. Altogether, this corresponds with Vodanovich, Sundaram, & Myers (2010) who have claimed that digital natives are an under-investigated group in the IS literature.

Online digital spaces such as VWs are not isolated from their users' other online and offline social interactions but rather extend one another (Katz & Rice, 2002; Subrahmanyam, Garcia, Harsono, Li, & Lipana, 2009). However, the focus of the present VW research has been predominantly on social factors intrinsic to the virtual environment (Goel et al., 2011; Jung, 2011; Saunders, Rutkowski, van Genuchten, Vogel, & Orrego, 2011). Hence, we scrutinize to what extent VW engagement is a function of factors intrinsic to the VW and one's social influences outside the VW.

Against this backdrop, we investigate teenagers' continuous use of Habbo Hotel, perhaps the best-known social virtual world (SVW) for young people. Our objective is to investigate the factors that drive teenagers to participate in a SVW on a continuous basis. To

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<sup>1</sup> Sulake Corporation: Habbo Hotel – Where Else? <http://www.sulake.com/habbo>.

<sup>2</sup> New World Notes: Now With 300K Members, Second Life's Facebook Page is By Far SL's Largest Social Media Presence – And Disproves an Old SL Myth <http://nwn.blogs.com/nwn/2013/04/second-life-facebook.html/>.

this end, we draw on social psychology (Fishbein & Ajzen, 1975), developmental psychology (Erikson, 1968), the uses & gratifications (U & G) approach (Blumler, 1979; Katz, Blumler, & Gurevitch, 1974). We employ a multi-method research design (Morse, 2003). We first develop a research model that incorporates utilitarian, hedonic and social outcomes of SVW use with the role of normative beliefs. The research model is then empirically tested with a sample of 842 users of the German Habbo Hotel portal and analyzed using structural equation modeling. We complement our analysis with a structured content analysis (Jauch, Osborn, & Martin, 1980) of users' comments regarding their reasons for using Habbo Hotel.

Our main contributions are twofold: First, by discussing our findings against the developmental needs of teenagers and the interplay between their virtual and "real" lives, we advance the understanding of the digital native user group. Second, we contribute to the VW literature with a more granular understanding of the role of social influences and social context in SVWs targeted at young people.

The paper proceeds as follows: First, we outline prior research and introduce the phenomena of SVWs, Habbo Hotel and digital natives. In Section 3, we develop the research model and hypotheses for the quantitative part of the study. In Section 4, we elaborate on the data collection, measurement and the two-step analysis. In Section 5 we present our main findings. In Section 6, we discuss the findings against the nature of Habbo Hotel as an IT artifact and the nature of the digital natives user group. We derive conclusions and expose design choices and future research opportunities in the last section.

## 2. Research background

### 2.1. Social virtual worlds

VWs can be divided into Gaming Virtual Worlds (GVWs) and SVWs (see e.g. Jung & Kang, 2010). In contrast to GVWs, SVWs do not feature explicit narratives or level-ups. Rather, they are open spaces in which the purpose of use is largely emergent. According to Bell (2008, 2) a VW is defined as "a synchronous, persistent network of people, represented as avatars, facilitated by networked computers." SVWs can be further characterized as "non-game spaces where games can be part of them but are not the defining characteristic of a virtual world" (Iqbal, Kankaanranta, & Neittaanmäki, 2010). We base our study on the following definition: *SVWs are persistent, computer-mediated, networked environments that are used for various user-determined purposes such as social interaction and communication, where users are represented as avatars.*

Prior literature has found the use of SVWs to vary widely, from taking classes to having cybersex (Zhou, Jin, Vogel, Fang, & Chen, 2011). From a motivational standpoint, SVW use has been viewed as a function of utilitarian and hedonic motives (Barnes, 2011). SVWs offer value for users through a pleasant environment for social interaction and enhancing communication within their social circle (Schwarz et al., 2012; Shin, 2009). In addition to the value and motivational factors, perceived network externalities (Mäntymäki & Salo, 2011) have been found to affect SVW participation. Hence, it has been argued that SVW use is determined by factors related to the IT artifact, the user, and the social setting (Schwarz et al., 2012).

### 2.2. Habbo Hotel

Habbo Hotel was founded in 2000 and has grown to accommodate 5 million unique visitors every month in altogether 32 country-specific portals. Hence, Habbo Hotel remains one of the most popular SVWs targeted at young people. According to Sulake,

the Finnish platform provider, 90% of its users are aged between 13 and 18.

Habbo Hotel runs on a web browser; its environment "resembles a giant contemporary Western indoor space, presented in isometric 'retro style' three-dimensional graphics and populated by blocky avatars, each controlled by a user" (Lehdonvirta, Wilska, & Johnson, 2009, 1065). In other words, Habbo avatars do not resemble human beings but look more like cartoon figures.

Unlike Second Life, users in Habbo cannot recreate the virtual world or buy new land. Users are provided with an avatar and a virtual hotel room that they can decorate using pieces of furniture. Habbo Hotel also incorporates various non-violent games and organizes events on a regular basis, such as celebrity visits, dress-up and decoration competitions. Using Habbo Hotel is free, but users can purchase virtual items and premium memberships with exclusive features for real money.

Habbo aims to provide a safe and friendly environment for young users; hence, activities found on Second Life such as cyber violence, gambling or sex are prohibited. Moreover, users remain anonymous in Habbo; revealing one's real identity or contact information inside the platform is prohibited and moderated by the operator. However, it is common for users to reveal their identities to friends using Facebook, Twitter or other applications.

Habbo Hotel is a representative example of VWs targeted at the young because of the user activities it facilitates and the contextual characteristics the platform shares with other similar services such as Club Penguin, Stardoll and GoSupermodel. Hence, Habbo Hotel has been utilized as a research context before: Mäntymäki and Salo (2011) found perceived enjoyment to be the primary determinant of continuous engagement of Habbo users. This notion was supported by Merikivi et al. (2013) who found that the continual participation in Habbo Hotel is a function of motivational and control beliefs. Iqbal et al. (2010) explored how children use VW platforms, one of which was Habbo. Finally, Griffiths and Light (2008) have investigated the ethical implications of Habbo as a social platform for teenagers.

### 2.3. Digital natives: a developmental perspective

The term digital natives is generally taken to refer to the first generation that was born into a world permeated by ICT and that has thus grown up with using ICT in their everyday lives (Palfrey & Gasser, 2008; Prensky, 2001). Digital natives are also said to naturally assume multiple virtual identities and view privacy differently than older generations (Palfrey & Gasser, 2008). However, in light of recent studies, digital natives should be viewed more as a descriptive category rather than an exact group or generation that by their very nature possesses better ICT skills (Bennett & Maton, 2010).

From a developmental psychology perspective, teenagers are experiencing a transfer period between childhood and adulthood, referred to as adolescence (see e.g. Erikson, 1968; Marcia, 1980). A core developmental process during adolescence is the development of a stable, coherent self (Erikson, 1968), whereby young people find their place in relation to others and come to understand the plethora of social practices that make up the social world (Brown, 1990). In the course of building their social identity (see Tajfel & Turner, 1986) they typically experiment with different roles to gain feedback (Harter, 2006) and contrast themselves to others (Brown, 1990), while they also acquire the necessary skills to interact competently in groups and establish relationships. With respect to social influence, during adolescence, teenagers "out-grow" their parents as the primary referent group and other peer groups become more influential (Harris, 1995).

At the same time, prior research reveals a strong link between young people's offline and online lives (Subrahmanyam, Reich, Waechter, & Espinoza, 2008). Hence, the volatility and fluidity of

teenagers' social behavior (Santrock, 2008) and their experimenting with social identity is likely to be influenced directly by their engagement in online spaces such as SVWs. In turn, their continuous SVW use is likely to be motivated by such interactions with various peer groups inside and outside of the SVW space.

### 3. Development of the research model

To explore the factors that drive continuous use of SVWs our aim is to develop a theoretical framework capable of capturing the characteristics of both the digital natives user group and the particular IT artifact. To this end, we build on the Theory of Reasoned Action (TRA) and assert that VW use decisions are determined by psychological gratifications from performing the behavior, and social influences. We further combine general insights from developmental psychology (Erikson, 1968; Marcia, 1980) and the U & G approach (Blumler, 1979; Katz et al., 1974) to capture the characteristics of the IT artifact, i.e. Habbo Hotel, and the user group, i.e. teenagers.

#### 3.1. Theoretical underpinnings

U & G has been widely used in communications research to explain why people choose and use new media (Stafford, Stafford, & Schkade, 2004) such as SVWs (Eisenbeiss, Blechschmidt, Backhaus, & Freund, 2012; Zhou et al., 2011). According to U & G, the gratifications are closely linked to the nature of the communication medium (Blumler, 1979). U & G research today views the media users not as a passive audience, but having an active role in integrating their media use in their lives (Ruggiero, 2000). Due to the voluntariness of use decisions, the large variety of activities available to the user, and the freedom to customize and co-create (Kohler, Fueller, Stieger, & Matzler, 2011) the user experience, U & G has an edge over the range of approaches examining technology adoption and use that offer a fixed set of predictor variables (see e.g. Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh, Thong, & Xu, 2012). Rather than providing a predefined set of factors and constructs, U & G provides a framework for building the nomological net of the research. Thus, we draw on contributions from social psychology, consumer research and technology adoption to identify our research constructs.

U & G aligns with motivation theories (see e.g. Lawler & Porter, 1967) by viewing media use as being driven by the valued outcomes, i.e. gratifications. Thus, the gratifications stem from the satisfaction of psychological needs (Deci & Ryan, 2000; Maslow, 1954). From an empirical perspective, prior U & G studies have found that media use is by and large driven by utilitarian, social and hedonic gratifications (see e.g. Stafford et al., 2004). The existence of these three types of gratifications has also been found to hold in the SVW context (Zhou et al., 2011). Hence, we begin by asserting that being engaged in Habbo Hotel can offer the user gratifications that are utilitarian, hedonic and social.

In addition to gratifications, human decisions are typically affected by social influences, such as normative beliefs (Fishbein & Ajzen, 1975). Furthermore, evidence from developmental psychology shows that social influence is particularly salient in shaping behavior during the socialization process (Brown, 1990). Thus, we examine the extent to which social influences affects decisions to use Habbo. Table 1 provides an overview of the nomological net of the constructs and associated theories that form the basis of our quantitative study.

#### 3.2. Research model and hypotheses

Since we focus on continuous SVW use, and our study has been conducted among existing Habbo Hotel users, our dependent variable is the *continuous use intention* (cf. e.g. Bhattacherjee,

2001; Bhattacherjee & Premkumar, 2004), i.e. the intention to keep using Habbo Hotel in the foreseeable future. We have used the use intention instead of actual usage to avoid any identification of the respondents.

Theories from social psychology such as the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975) and the Theory of Planned Behavior (TPB) (Ajzen, 1991) posit that human behavior is generally well predicted by intentions. The use intention has also been frequently used as a surrogate for technology use (see e.g. Lin & Bhattacherjee, 2008) and the relationship between the IT use intention and use behavior has been empirically verified in numerous previous studies (Davis, 1989; Taylor & Todd, 1995). Thus, we hold that continuous use intention is an appropriate measure for the subjective probability to engage in Habbo Hotel in the future.

With respect to the independent variables, U & G posits that media use is goal-directed behavior aimed at fulfilling one's individual set of needs (Blumler, 1979) and can be driven by various motives (see e.g. Deci & Ryan, 2000). Hence, U & G is able to grasp the use context of the IT artifact (Benbasat & Zmud, 2003) and the user group. SVWs, including Habbo, do not possess explicit goals or scripted storylines; instead they facilitate a wide range of user-created content. Hence, SVWs are also likely to be used for multiple purposes (Verhagen, Feldberg, van den Hooff, Meents, & Merikivi, 2012; Zhou et al., 2011).

With regard to the motivational structure, young people are said to often engage in online environments to communicate and stay in touch with people known from the offline world (Subrahmanyam et al., 2008). By and large, prior VW research has found utilitarian outcomes to influence the use decisions (Barnes, 2011; Shin, 2009; Verhagen et al., 2012). This is aligned with the notion that interactions with other people are a main reason for SVW participation (Zhou et al., 2011). Given the nature of Habbo Hotel and its affordances for young users, we reason that the potential utility is likely to be related to enhanced communication with other people while spending time in the virtual environment. We have operationalized the utilitarian outcome construct accordingly (see Appendix 1). As a result, the first hypothesis reads as follows:

**H1.** Utilitarian outcomes have a positive effect on the user's continuous use intention.

In addition to utilitarian gratifications, U & G posits that the pleasure and enjoyment experienced *from and during* the use drive the decision to choose and use a medium. This resonates with the way young people consume the Web (Hartman, Shim, Barber, & O'Brien, 2006). However, prior SVW research offers mixed evidence regarding the role of hedonic outcomes (Shin, 2009; Mäntymäki & Salo, 2011). While Shin (2009) did not find perceived enjoyment predicting the intention to engage in Second Life, Mäntymäki and Salo (2011) in studying Habbo Hotel in the US context reported perceived enjoyment exceeding perceived usefulness in predicting the continuous use intention. Hence, we hypothesize the following:

**H2.** Hedonic outcomes have a positive effect on the user's continuous use intention.

In addition to utilitarian and hedonic outcomes, we assert that continuous SVW use is also driven by a number of social gratifications. Prior research has found that status expectations drive the decisions to use technological innovations (Moore & Benbasat, 1991; Venkatesh & Davis, 2000; Venkatesh & Brown, 2001) as well as other consumption choices (Eastman & Goldsmith, 1999). Previous VW studies have examined aspects of the in-world social setting as the primary source of status (Guo & Barnes, 2011; Lin & Bhattacherjee, 2010). To advance the understanding of status in SVW use, we take a different position and concentrate on status gains from SVW use among one's peers outside the virtual world (cf. Brown & Venkatesh, 2005). Gaining status and social recognition

**Table 1**  
The nomological net of the quantitative study.

Factor	Theory	Construct	Definition	Reference
Social gratifications	Innovation Diffusion Theory	Status gains outside the SVW	The degree to which individuals gain social status outside the SVW by using the platform.	Moore and Benbasat (1991)
	Social Presence Theory	Social presence	The degree of human warmth associated with the SVW.	Yoo and Alavi (2001)
Utilitarian gratifications	Self-determination Theory	Utilitarian outcomes	The extent to which using the SVW will help to attain gains in social interaction and leisure time.	Deci and Ryan (2000), Venkatesh and Brown (2001)
Hedonic gratifications	Self-determination Theory	Hedonic outcomes	The extent to which using the SVW is perceived enjoyable in its own right.	Deci and Ryan (2000), Venkatesh and Brown (2001)
Social influences	Theory of Reasoned Action	Interpersonal influence	The normative influence of the important referents using the SVW.	Fishbein and Ajzen (1975)
	Innovation Diffusion Theory	Secondary sources of information	The extent to which information from TV, newspapers and other secondary sources influence the use of the SVW.	Brown and Venkatesh (2005), Rogers (2003)
	Theory of Network Externalities	Perceived network size	The perception of the degree to which important others are present in the SVW.	Katz and Shapiro (1986)

can be assumed to be particularly important among Habbo Hotel users who are typically in the process of building their identity and supporting their self-image (Brown, 1990). To this end, Habbo Hotel users can signal their activities to their Facebook friends with status updates or use the appearance of their avatars as a profile picture in other channels such as instant messengers. Thus, it is plausible to assume that SVW use can transcend into status gains outside the platform and put forward the following hypothesis:

**H3.** Status gains outside the SVW have a positive effect on the user's continuous use intention.

In addition to status, the need to feel close to and accepted (Deci & Ryan, 2000) by other individuals has been found to drive participation in online communities (Bagozzi & Dholakia, 2002; Rheingold, 2000). The fulfillment of this need is influenced by the attributes of the communication medium, such as its ability to facilitate rich human contact (Gefen & Straub, 2004). Habbo Hotel employs customizable avatars that allow users to experiment with different roles and identities, which in turn is a part of building social identity and a coherent self (Harter, 2006). A friendly environment encourages self-disclosure that in turn is a key component when adolescents form friendships (Berndt & Perry, 1990). This underscores the importance of social context as a predictor of sustained engagement in SVWs (Animesh et al., 2011; Schwarz et al., 2012). As a result, to capture the perception of sociability and human warmth associated with Habbo Hotel, we employ the measures of social presence (see Appendix 1) by Gefen and Straub (2004) and propose the following hypothesis:

**H4.** Social presence has a positive effect on the user's continuous use intention.

To further expand upon U & G, we examine the role of social influences. In prior IT adoption research, social influence affecting use intentions have typically been captured by the subjective norm construct (Taylor & Todd, 1995; Venkatesh & Davis, 2000; Hsieh, Rai, & Keil, 2008). However, to gain a more detailed insight on the sources of social influence, we investigate two sets of normative beliefs: interpersonal influence and external sources of information (Venkatesh & Brown, 2001).

Interpersonal influence covers the opinions of one's significant others regarding the use of the technology. This may include family, friends, relatives, and peers (Hsieh et al., 2008). Interpersonal influence has been found to impact on IT use decisions in household contexts (Brown & Venkatesh, 2005) as well as the adoption of interactive digital technologies (Hsieh et al., 2008), both of which are relevant referent contextual domains for VVs. Given

that friends in particular but also parents by and large, are the key sources of social influence for adolescents (Krosnick & Judd, 1982), it is plausible to assume that these two group exert normative pressure on an individual. We thus hypothesize:

**H5.** Interpersonal influence has a positive effect on the user's continuous use intention.

Information from external sources includes mass media, expert opinions and other forms of non-personal information (Rogers, 2003). For example, prior literature has found that young people's behavior is influenced by messages from the media (Werner-Wilson, Fitzharris, & Morrissey, 2004). As Habbo Hotel is visibly present in media consumed by the teen audience such as TV and YouTube,<sup>3</sup> it seems reasonable to investigate whether the target group feels influenced by mass media and commercials, and to what extent this pressure affects their intentions to engage in the platform.

**H6.** Secondary sources of information have a positive effect on the user's continuous use intention.

According to the theory of network externalities, a large number of users in one's personal network is likely to increase the value of adopting a technological innovation that is used to interact with other users (Katz & Shapiro, 1986). With regard to Habbo Hotel, connecting with real-life friends in Habbo has been viewed to motivate the use (Iqbal et al., 2010). Since evaluating the actual number of users in one's network poses significant challenges (Li, Chau, & Van Slyke, 2010), we define perceived network size as the perceived degree to which the members of one's social network are present in the SVW (cf. Lin & Bhattacharjee, 2008). We thus posit that perceived network size is a direct predictor of use intention (Van Slyke, 2007).

**H7.** Perceived network size has a positive effect on the user's continuous use intention. The research model is presented in Fig. 1.

## 4. Empirical study

### 4.1. Research design

Any research on minors' personal use of technology raises several ethical questions regarding empirical access and potential

<sup>3</sup> Example of Habbo Hotel TV commercial <http://www.youtube.com/watch?v=Ni1ZBjMjTU>.

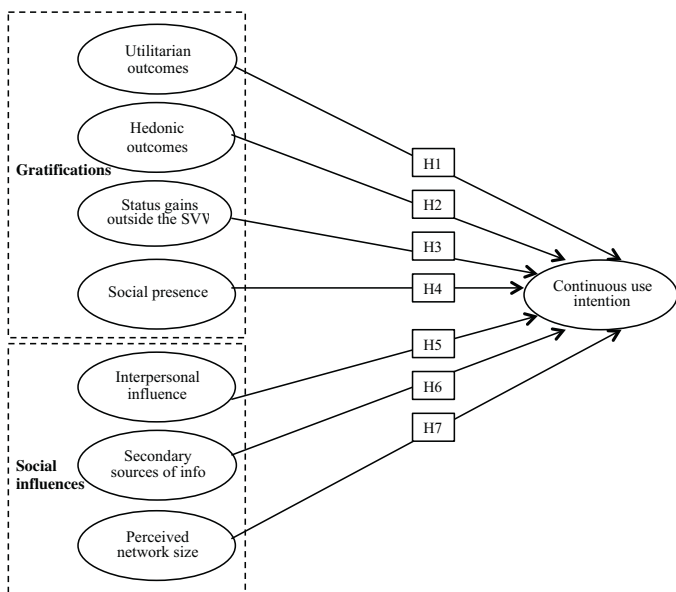


Fig. 1. The research model.

impact of the research on the user group (Morrow & Richards, 1996). To minimize the impact of the research on the subjects, we employed a distanced research design using survey in the data collection.

Our study is based on a multi-method design (Morse, 2003) and uses quantitative hypotheses-testing inquiry as its main method. To gain a deeper understanding of the users' perspective, we complement the quantitative inquiry with a structured content analysis (Jauch et al., 1980) of users' free text comments. The role of the qualitative analysis is also to aid in the interpretation of our quantitative findings (Morse, 2003). Prior to the data collection, discussions with Habbo's management and developers, information available on the Sulake website, various Habbo fansites, and the Habbo Hotel portal itself proved invaluable in gaining a rich initial understanding guiding study design.

#### 4.2. Data collection

Data for our study was collected through an online survey published on the home page of the German Habbo Hotel portal. The German portal was launched already in 2001 and is thus one of the oldest Habbo portals. The survey contained worded items on a 7-point Likert-scale ranging from strongly agree to strongly disagree, except for perceived network size, which was measured with a semantic scale. All items were adopted from prior measures with wordings adjusted to the SVW context. The survey was originally developed in English and thereafter translated and back-translated by professional translators. The measurement items with corresponding references to literature are presented in Appendix 1.

In total, the online survey was accessed 3459 times. A total of 1811 responses were received. Thus, the completion rate was approximately 52%. Since our focus was on teenagers (as representative of the digital natives user group) and since according to the operator this is the group that forms the majority of Habbo Hotel users, we included only those 1230 responses from respondents aged between 13 and 18 years. To ensure the best possible quality of responses, we decided to include only responses where the questionnaire was fully completed, which yielded a final sample size of 842. The demographic properties of the sample are presented in Table 2.

Table 2  
Gender and age distribution of the respondents.

Gender	Frequency	Percent	Age	Frequency	Percent
Female	321	38.1	13	267	31.7
Male	521	61.9	14	242	28.7
			15	164	19.5
			16	90	10.7
			17	45	5.3
			18	34	4.0
Total	842	100.0		842	100.0

#### 4.3. Quantitative data analysis: hypotheses testing

The quantitative data was analyzed using structural equation modeling (SEM) with Amos 21 software. To assess model fit and construct reliability and validity, the data analysis began with a confirmatory factor analysis (CFA) of the measurement model. Maximum likelihood (ML) estimation was used, since the data was only moderately non-normal and ML has proven robust with large sample sizes and under conditions of non-normality (Reinartz, Haenlein, & Henseler, 2009). Each construct was modeled as reflective.

The convergent validity was evaluated based on three criteria: (1) all indicator factor loadings should be significant and exceed 0.7; (2) composite reliabilities should exceed 0.70; and (3) the average variance extracted (AVE) by each construct should be greater than the variance due to measurement error ( $AVE > 0.50$ ) (Fornell & Larcker, 1981). The factor loadings exceeded 0.7 and were significant at the 0.001 level. Thus, all reflective measures met the criteria for convergent validity. Discriminant validity was investigated by examining whether the AVE for each construct was higher than the squared correlation between it and all other constructs (Fornell & Larcker, 1981). The statistics for convergent and discriminant validity (Appendices 1 and 2) demonstrate that the respective tests were met. As the fit for the measurement model was good (GFI = 0.911; AGFI = 0.888; NFI = 0.934; TLI = 0.944; CFI = 0.952; SRMR = 0.048; RSMEA = 0.054). The risk of common method bias (CMB) was examined with CFA using the single-factor approach presented by Malhotra, Kim, and Patil (2006). The single-factor model exhibited a very poor fit (GFI = 0.495; CFI = 0.537; RMSEA = 0.160), which indicates that CMB is unlikely to be a major concern.

After having verified the validity of the measurement model, we proceeded to testing the hypotheses with the structural model. Altogether, only two of the seven hypotheses were supported. The model accounted for 39.5% of the use intention. Fig. 2 illustrates the results from the structural model.

After having tested the hypothesized relationships, an investigation of the background variables gender, age and length of prior experience with Habbo Hotel was conducted following the procedures advanced by Jöreskog and Sörbom (1993). Median values of age and experience were used to split the data into the two respective subsamples. The analysis revealed only one statistically significant ( $p < 0.05$ ) moderating effect: utilitarian outcomes were significant for the male respondents, but not for the female respondents.

#### 4.4. Qualitative analysis: structured content analysis of user comments

In addition to the quantitative analysis, we collected qualitative data derived from an open question asking for reasons why users use Habbo Hotel. The data consisted of 842 responses that varied from one-word statements to few surprisingly rich narratives.

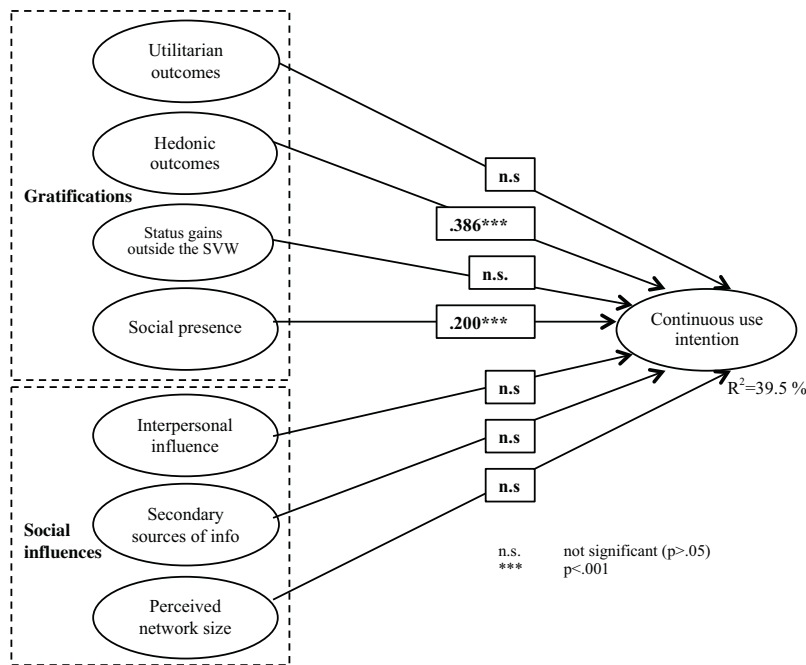


Fig. 2. Results of the structural model.

The aim of our analysis was to describe the data to identify the key reasons why people engage in the platform. As the overall number of responses was relatively high, but majority of the comments were rather brief, we used structured content analysis to analyze the qualitative data (Jauch et al., 1980).

We began the analysis by identifying the keywords that describe the reasons for using the platform. To this end, we screened the data to form a list of keywords that emerged frequently in the responses. After having established a list of keywords, we counted the appearance of our keywords and extracted eight concepts. Each concept is represented by two semantically similar key words (e.g. sometimes users used the English ‘fun’ instead of the German ‘Spass’). Wildcards were used to count the entries that contained the respective keywords. We also controlled for the second appearance of key words to avoid counting double those replies that contained both keywords representing a construct. Table 3 and Fig. 3 provide an overview of the concepts and their frequencies.

To gain a deeper insight on the data and to enrich the results obtained from the keyword analysis, we conducted an open coding on a randomly selected subset (n = 300) of responses. We allowed the concepts emerge from the data and combined similar concepts to form a code. Each concept was allowed to fall into multiple codes when applicable (Miles & Huberman, 1984). Thereafter, we counted

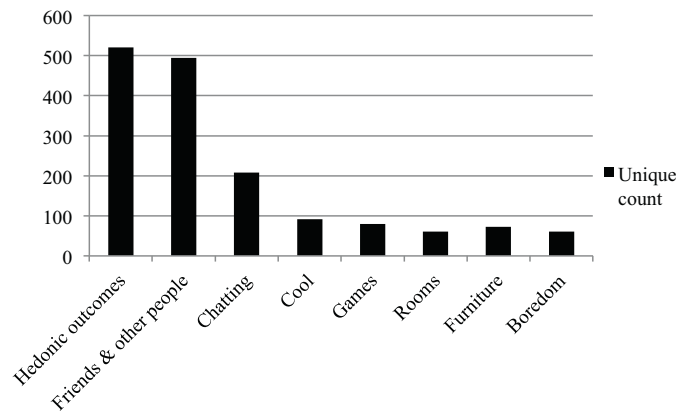


Fig. 3. Results from the keyword analysis.

the appearance of the codes. The results demonstrated prevalence of nine out of the altogether 21 codes and corroborated the picture obtained from the keyword analysis. The respective results are presented in Table 4.

Table 3  
Keyword analysis of user replies.

Concept	Keyword 1	Keyword 2	Unique count
Hedonic outcomes	*spass* 481	*fun* 49	521
Friends & other people	*freund* 388	*leute* 124	494
Chatting	*chat* 189	*rede* 19	208
Cool	*cool* 67	*geil* 25	92
Games	*spiel* 74	*game* 6	80
Rooms	*raum* 17	*räume* 45	61
Furniture	*möbel* 64	*einrichten* 9	73
Boredom	*langweil* 34	*langweil* 27	61

Table 4  
Results from the open coding.

Code	Number of appearances in 300 responses
Fun	154
Existing friends	98
Passing time and avoiding boredom	43
Chatting	42
New friends	35
Other users	29
Cool	17
Room and decoration	12
Trading	11

## 5. Findings

### 5.1. Factors driving continuous SVW use

The main finding from our quantitative analysis is that only hedonic outcomes and social presence exert a significant effect on teenagers' continuous use of Habbo Hotel. Given that the remaining five hypotheses remained non-significant, this result deviates markedly from both our expectations and prior research.

First, surprisingly, the continuous use intention is not predicted by utilitarian outcomes. While corroborating the results from a prior study undertaken with Habbo users in the US (Mäntymäki & Salo, 2011) and in Finland (Merikivi et al., 2013), this finding sharply contrast with some previous VW studies (Barnes, 2011; Shin, 2009) where utilitarian outcomes generally overruled hedonic ones in explaining use decisions. Altogether, the predominance of hedonic outcomes supports the assertion by Verhagen et al. (2012) that SVWs should not be categorically labeled as multi-purpose IS.

Second, the insignificant effect of utilitarian outcomes capturing and perceived network size indicates that the users do not value Habbo Hotel primarily as a medium to connect with their existing social network. This contrasts with findings from related fields such as social network sites (SNSs) (Xu, Ryan, Prybutok, & Wen, 2012), instant messaging (Li et al., 2010; Lin & Bhattacharjee, 2008), and interestingly also the American Habbo portal (Mäntymäki & Salo, 2011).

As a third main finding, the insignificant effect of interpersonal influence is in sharp contrast with our reasoning that other people such as friends or family would have a central influence on the use decisions. Similarly, Habbo's presence in the media did not influence the continuous use intention. Finally, the insignificant effect of status gains reveals that teenagers do not see Habbo as a means to impress others in their social network outside the platform.

In summary, these results lead to two interesting observations. First, teenagers make their use decisions independently. Second, the two factors with a significant effect, hedonic outcomes and social presence, are both intrinsic to the platform as they capture outcomes derived directly from the engagement and immersion in the virtual environment.

### 5.2. Findings derived from the content analysis

The fact that hedonic outcomes were clearly the predominant reason for using Habbo accords with the respective result from the quantitative study. The important role of friends and other people in the platform in turn highlights the importance of Habbo as a social environment where users clearly feel comfortable when interacting with other users. This notion reaffirms the role of human warmth and sociability associated with the platform, measured with social presence. Moreover, while perceived network size did not have a direct effect on the continuous use intention, network externalities may contribute to the gratifications, identification with the platform and (Chiu, Cheng, Huang, & Chen, 2013) or users' collective actions within the platform (Shen, Cheung, & Lee, 2013).

From the U & G perspective, the results from the qualitative study lead to two observations. First, hedonic outcomes and other main concepts were typically mentioned in conjunction. The associations between hedonic outcomes and other concepts such as friends, decorating and playing games indicate that these activities contribute to the hedonic experience. This in turn suggests that the gratifications can manifest themselves in a hierarchical order.

Second, typical concepts potentially associated with hedonic outcomes, such as "Games & Playing" are much less frequently mentioned (see Table 3 and Fig. 3). Hence, we conclude that it is particularly the socializing with others and thus the community

nature of the platform, rather than other aspects such as gaming, that is the main source of enjoyment. Consequently, Habbo provides a rich social environment that users experience as 'fun' and gratifying. The following are typical statements that express this relationship:

"I visit Habbo, because it's fun to chat with friends and other nice people."

"Because it is fun to meet friends, hang out and chat."

Apart from these main reasons, users quote a range of other activities that are afforded by the Habbo environment, such as playing games, decorating rooms, or styling and restyling one's avatar as a form of self-expression. Altogether, this demonstrates that the enjoyable experience is essentially related to the social environment and other users.

## 6. Discussion

### 6.1. Boundaries between virtual world and real life

Interestingly, many users make a clear distinction between engagement inside Habbo Hotel and life outside, referring to the latter as the "real life", the "real world" or with an abbreviated acronym as "IRL" ("in real life"). This is in line with research by Griffiths and Light (2008) who similarly observed that teenagers make a strong distinction between their interactions in Habbo and their real life encounters. Upon closer inspection, this difference manifests in different ways. First, users see Habbo as a refuge from the "stress" and "troubles" of teenage life in the "real world":

"It's a change from the real day."

"You can just chill after school and forget about the real life trouble—you can create your own life, you have many friends and just fun and you always look forward to new experiences in the Hotel"

Second, users appreciate the casual nature of the social space for making it easier to adopt a new, virtual identity to deliberately leave behind some of the constraints faced in real life, which affords interacting and experimenting with different forms of self-expression in a risk-free way:

"Because I have many friends there it is easier for me to get in contact there, because I'm pretty shy."

"You can do all the things you can't do in the real world"

Finally, the virtual space allows meeting with people who, due to geographical distance, cannot be visited in real life. It also allows users to make new friends more easily than in the "real world"; some users even report that they have found a girlfriend or boyfriend on the platform.

"You can chill with friends, who you couldn't meet because in real life they live far away."

"Because you can write to friends, even if they are not friends you know in person."

Overall, our findings demonstrate an interesting duality related to the relationship between Habbo and real life. For many users, Habbo is an extension of real-life social interaction as the users typically interact with their offline friends after school. On the other hand, users derive hedonic outcomes from the social nature of Habbo as a space that is distinctly different from and affords "escaping" the constraints of their real life. The fact that many users do not see Habbo as a direct extension of their other social interactions may explain why factors such as social influences, status and

utilitarian outcomes that are extrinsic to the platform itself were not significant predictors of continuous use intention.

From a theoretical standpoint, these findings suggest that the social augmentation (Katz & Rice, 2002) and social compensation hypotheses (McKenna & Bargh, 1998) of online communication can co-exist in SVWs. In line with the augmentation hypothesis, environments such as Habbo add on the existing offline and online social interactions. At the same time, SVWs also offer a venue to overcome the challenges with social interaction in “real life”, which in turn aligns with the social compensation hypothesis. Altogether, the avatar-to-avatar interactions in a shared virtual space offer a means to seek and obtain affirmation from others when building the extended self in the digital world (see Belk, 2013).

## 6.2. Understanding digital natives

Teenagers find themselves in a period of change, where they have yet to find their place in the social configuration of the world (Santröck, 2008). Against this backdrop, the developmental needs of teenagers are reflected in their use of Habbo Hotel. Our findings show that Habbo Hotel facilitates various developmental purposes such as experimenting with self-representation (Zhao, 2005), socializing and establishing relationships with peers (Harter, 2006) as well as social learning (Bandura, 1986) in the process of developing a coherent, integrated self toward adulthood (Erikson, 1968) in an enjoyable way.

Moreover, in light of the risks commonly associated with VW use (see e.g. Chesney, Coyne, Logan, & Madden, 2009), the user statements, somewhat surprisingly, indicate that Habbo Hotel is perceived as a less risky environment than the real world: “*Because it is one of the best and safest chats on the Internet. You don't get groomed or abused and you can get one of the moderators to help you.*” The moderated and largely anonymous environment protects the teenage user community from unwanted (adult) content and behavior by enforcing a strict code of conduct and can thus be seen as the necessary precondition for social experimentation to take place.

Our findings further show that Habbo Hotel is seen as a space that allows stepping out of one’s “real life” into a distinct teenage world. Hence, teenagers consider Habbo Hotel a shared space (Belk, 2013) that is “for them”. This space allows socializing and having fun with peers but essentially also encountering or evading the troubles that come with growing up. Taken together, we contribute to the understanding of how digital natives consider engagement in virtual environments as a natural part of their everyday lives (Palfrey & Gasser, 2008) with our dualistic account of Habbo as an extension of other online and offline social interactions and as a distinct space for social experimentation and play.

Second, our study corroborates the notion recognizing that “teenagers consume the Internet as an experiential, rather than economic activity” (Lee & Conroy, 2005, p. 8), in that they spend more time online in hedonic activities than adults (Griffiths,

Davies, & Chappell, 2004). At the same time, however, our observations point to a qualitative difference. Rather than viewing the Internet as a set of services to be *used* or *consumed*, which suggests a goal-oriented relationship, for digital natives the Internet, and in particular environments such as Habbo are more like a habitat, where they spend time, socialize, build their extended selves, and thus live, often extended periods of time.

## 7. Conclusion

We set out to investigate continuous use of SVWs among teenagers with a multi-method study of Habbo Hotel. Our findings show that continuous use intention is primarily driven by the hedonic gratifications obtained from the experiences inside the SVW. In other words, users engage in the SVW because of what they gain *inside* Habbo Hotel, not what they gain in the ‘real’ world, nor because of other people’s opinions. This motivational structure contrasts markedly with prior literature (Shin, 2009) and challenges the notion that VWs should be categorically labeled as multi-purpose IS (Verhagen et al., 2012).

Furthermore, we have advanced the understanding of digital natives as IT users (Vodanovich et al., 2010) by showing how they naturally cross the border between real life and digital space to extend or to take a break from their offline environment. Hence, a key characteristic of the digital natives as a IS users is their dualistic relationship with the online space.

From a managerial perspective, our key findings are the prevalence of hedonic gratifications in driving the usage decisions and the fact that interpersonal influence, media, or status gains outside the SVW did not have any effect on the continuous use intention. By and large, our findings question the payoff from the efforts to make SVW participation ‘cool’ or promoting the platform in other media. This may be a point to consider for the operator in Habbo in particular but also for the VW operators in general.

Our research is bounded by certain design choices that resulted from the ethical considerations. First, to preserve a full anonymity, the respondents have been self-selected and a cross-sectional research design was employed. Second, we have used self-reported measures and behavioral intention instead of investigating actual behavior. Third, we have focused only on one platform in one language. Due to these limitations, the results cannot be generalized in a statistical sense.

Based on this study, we view propose to areas of future research. First, as we uncovered hedonic outcomes and social presence as the main determinants of continuous use intention, future studies could investigate in more detail the factors and design features that contribute to a pleasurable user experience and create a friendly social environment in a VW setting. In practice, placing the gratifications in a hierarchical order could be the first step in this line of research. Second, to advance our understanding of digital natives, we suggest future research to develop empirical measures focusing specifically on the characteristics of this group.



## Appendix 1.

**Table A.1**

The survey instrument and the descriptive statistics.

	Mean	S.D.	Loading	Measurement item	Adopted from
				Using Habbo	Li et al. (2010)
UTI1	5.184	1.974	0.786	... Helps me stay in close touch with my friends.	
UTI2	5.186	1.949	0.766	... Helps me to make new friends more efficiently.	
UTI3	5.348	1.793	0.702	... Allows me to express myself.	
UTI4	5.521	1.729	0.720	... Is a good way to spend free time.	
UTI5	5.162	1.830	0.821	... Comes in handy for my communication.	
UTI6	5.184	1.974	0.786	... Comes in handy for my information research.	
HED1	5.045	1.793	0.717	It is enjoyable to use Habbo.	Venkatesh (2000)
HED2	5.963	1.502	0.894	It is fun to use Habbo.	
HED3	5.890	1.501	0.876	It is entertaining to use Habbo.	
STA1	4.261	2.206	0.704	People who use Habbo have a high profile.	Brown and Venkatesh (2005)
STA2	3.411	2.190	0.846	People who use Habbo have more prestige than those who do not.	
STA3	3.279	2.170	0.934	Using Habbo improves my status among those who are richest and smartest.	
STA4	3.423	2.265	0.889	Using Habbo improves my status among those who are the most meaningful to me.	
SP1	4.517	2.055	0.830	There is a sense of human contact in Habbo.	Gefen and Straub (2004)
SP2	5.169	1.846	0.797	There is a sense of human warmth in Habbo.	
SP3	4.120	2.127	0.787	There is a sense of sociability in Habbo.	
PNS1	3.481	1.904	0.932	How many of your friends use Habbo? (none...all)	Lin and Bhattacharjee (2008)
PNS2	3.990	1.949	0.890	How many of your peers use Habbo? (none...all)	
PNS3	3.607	1.860	0.905	How many people in your environment use Habbo? (none...all)	
SEC1	4.089	2.223	0.734	Media (Internet, magazines, TV, etc.) and commercials are an important source of information about using Habbo.	Brown and Venkatesh (2005)
SEC2	3.841	2.113	0.863	I feel encouraged by media and commercials to use Habbo.	
SEC3	3.874	2.285	0.805	I feel persuaded by media and commercials to use Habbo.	
INT1	2.811	1.848	0.722	My family thinks I should use Habbo.	Hsieh et al. (2008)
INT2	3.529	2.138	0.907	My friends think I should use Habbo.	
INT3	3.537	2.135	0.864	People I communicate with most often think I should use Habbo.	
CUI1	5.742	1.848	0.905	I intend to continue using Habbo during the next three months.	Bhattacharjee (2001)
CUI2	5.435	1.840	0.908	I intend to continue using Habbo frequently during the next three months.	and Hsieh et al. (2008)
CUI3	5.850	1.713	0.818	I will keep on using Habbo in the future.	

## Appendix 2.

**Table A.2**

Composite reliabilities and the squared correlations between the constructs.<sup>a</sup>

	Comp.Rel.	CUI	HED	EXT	SEC	PNS	UTI	SP	STA
CUI	0.910	<b>0.775</b>							
HED	0.871	0.346	<b>0.675</b>						
SEC	0.844	0.105	0.161	<b>0.659</b>					
INT	0.872	0.091	0.128	0.354	<b>0.676</b>				
PNS	0.935	0.050	0.071	0.211	0.483	<b>0.713</b>			
UTI	0.776	0.305	0.569	0.335	0.294	0.176	<b>0.775</b>		
SP	0.847	0.237	0.277	0.272	0.242	0.107	0.473	<b>0.660</b>	
STA	0.910	0.059	0.098	0.306	0.392	0.286	0.295	0.176	<b>0.742</b>

<sup>a</sup> AVEs bolded in the main diagonal.

## References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Animesh, A., Pinsonneault, A., Yang, S.-B., & Oh, W. (2011). An odyssey into virtual worlds: Exploring the impacts of technological and spatial environments on intention to purchase virtual products. *MIS Quarterly*, 35(3), 789–810.
- Bagozzi, R. P., & Dholakia, U. M. (2002). Intentional social action in virtual communities. *Journal of Interactive Marketing*, 16(2), 2.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Barnes, S. J. (2011). Understanding use continuance in virtual worlds: Empirical test of a research model. *Information & Management*, (8), 313–319.
- Belk, R. W. (2013). Extended self in a digital world. *Journal of Consumer Research*, 40(3), 477–500.
- Bell, M. W. (2008). Toward a definition of "virtual worlds". *Journal of Virtual Worlds Research*, 1(1).
- Benbasat, I., & Zmud, R. W. (2003). The identity crisis within the IS discipline: Defining and communicating the discipline's core properties. *MIS Quarterly*, 27(2), 183–194.
- Bennett, S., & Maton, K. (2010). Beyond the 'digital natives' debate: Towards a more nuanced understanding of students' technology experiences. *Journal of Computer Assisted Learning*, 26(5), 321–331.
- Berndt, T. J., & Perry, T. B. (1990). Distinctive features and effects of early adolescent friendships. In R. Montemayor (Ed.), *Advances in adolescent research*. Greenwich, CT: JAI Press.
- Bhattacharjee, A. (2001). Understanding information systems continuance: An expectation–confirmation model. *MIS Quarterly*, 25(3), 351–370.
- Bhattacharjee, A., & Premkumar, G. (2004). Understanding changes in belief and attitude toward information technology usage: A theoretical model and longitudinal test. *MIS Quarterly*, 28(2), 229–254.
- Blumler, J. G. (1979). The role of theory in uses and gratifications studies. *Communication Research*, 6(1), 9–36.
- Brown, B. B. (1990). Peer groups and peer culture. In S. S. Feldman, & C. R. Elliot (Eds.), *At the threshold: The developing adolescent* (pp. 171–196). Cambridge, MA: Harvard University Press.
- Brown, S. A., & Venkatesh, V. (2005). Model of adoption of technology in households: A baseline model test and extension incorporating household life cycle. *MIS Quarterly*, 29(3), 399–426.
- Chesney, T., Coyne, I., Logan, B., & Madden, N. (2009). Griefing in virtual worlds: Causes, casualties and coping strategies. *Information Systems Journal*, 19(6), 525.

- Chiu, C., Cheng, H., Huang, H., & Chen, C. (2013). Exploring individuals' subjective well-being and loyalty towards social network sites from the perspective of network externalities: The Facebook case. *International Journal of Information Management*, 33(3), 539–552.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268.
- Eastman, J. K., & Goldsmith, R. E. (1999). Status consumption in consumer behavior: Scale development and validation. *Journal of Marketing Theory & Practice*, 7(3), 41.
- Eisenbeiss, M., Blechschmidt, B., Backhaus, K., & Freund, P. A. (2012). "The (real) world is not enough:" Motivational drivers and user behavior in virtual worlds. *Journal of Interactive Marketing*, 26(1), 4–20.
- Erikson, E. H. (1968). *Identity youth and crisis*. New York: Norton.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to the theory and research*. Reading, MA: Addison-Wesley.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Gefen, D., & Straub, D. W. (2004). Consumer trust in B2C e-commerce and the importance of social presence: Experiments in e-products and e-services. *Omega (Oxford)*, 32(6), 407.
- Goel, L., Johnson, N. A., Junglas, I., & Ives, B. (2011). From space to place: Predicting users' intentions to return to virtual worlds. *MIS Quarterly*, 35(3), 749–771.
- Griffiths, M., & Light, B. (2008). Social networking and digital gaming media convergence: Classification and its consequences for appropriation. *Information Systems Frontiers*, 10(4), 447–459.
- Griffiths, M. D., Davies, M. N. O., & Chappell, D. (2004). Online computer gaming: A comparison of adolescent and adult gamers. *Journal of Adolescence*, 27(1), 87–96.
- Guo, Y., & Barnes, S. (2011). Purchase behavior in virtual worlds: An empirical investigation in second life. *Information & Management*, 48(7), 303–312.
- Guo, Y., & Barnes, S. J. (2012). Explaining purchasing behavior within world of warcraft. *Journal of Computer Information Systems*, 52(3), 18–30.
- Harris, J. R. (1995). Where is the child's environment? A group socialization theory of development. *Psychological Review*, 102(3), 458.
- Harter, S. (2006). The development of self-representations in childhood and adolescence. In W. Damon, & R. Lerner (Eds.), *Handbook of child psychology*. New York, NY: Wiley.
- Hartman, J. B., Shim, S., Barber, B., & O'Brien, M. (2006). Adolescents' utilitarian and hedonic web consumption behavior: Hierarchical influence of personal values and innovativeness. *Psychology and Marketing*, 23(10), 813–839.
- Hsieh, J. J. P., Rai, A., & Keil, M. (2008). Understanding digital inequality: Comparing continued use behavioral models of the socio-economically advantaged and disadvantaged. *MIS Quarterly*, 32(1), 97–126.
- Iqbal, A., Kankaanranta, M., & Neittaanmäki, P. (2010). Experiences and motivations of the young for participation in virtual worlds. *Procedia – Social and Behavioral Sciences*, 2(2), 3190–3197.
- Jauch, L. R., Osborn, R. N., & Martin, T. N. (1980). Structured content analysis of cases: A complementary method for organizational research. *The Academy of Management Review*, 5(4), 517–525.
- Jones, C., Ramanau, R., Cross, S., & Healing, G. (2010). Net generation or digital natives: Is there a distinct new generation entering university? *Computers & Education*, 54(3), 722–732.
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL8 user's reference guide*. Chicago, IL: Science Software.
- Jung, Y. (2011). Understanding the role of sense of presence and perceived autonomy in users' continued use of social virtual worlds. *Journal of Computer-Mediated Communication*, 16(4), 492–510.
- Jung, Y., & Kang, H. (2010). User goals in social virtual worlds: A means-end chain approach. *Computers in Human Behavior*, 26(2), 218–225.
- Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. G. Blumler, & E. Katz (Eds.), *The use of mass communications: Current perspectives on gratifications research*. Beverly Hills, CA: Sage.
- Katz, J. E., & Rice, R. E. (2002). Syntopia: Access, civic involvement, and social interaction on the net. In B. Wellman, & C. Haythornthwaite (Eds.), *The Internet in everyday life* (pp. 114–138). Blackwell Publishers Ltd.
- Katz, M. L., & Shapiro, C. (1986). Technology adoption in the presence of network externalities. *The Journal of Political Economy*, 94(4), 822–841.
- Kohler, T., Fueller, J., Stieger, D., & Matzler, K. (2011). Avatar-based innovation: Consequences of the virtual co-creation experience. *Computers in Human Behavior*, 27(1), 160–168.
- Krosnick, J. A., & Judd, C. M. (1982). Transitions in social influence at adolescence: Who induces cigarette smoking? *Developmental Psychology*, 18(3), 359–368.
- kZero. (2012). *kZero universe Q1 2012*.
- Lawler, E. E., & Porter, L. W. (1967). Antecedent attitudes of effective managerial performance. *Organizational Behavior and Human Performance*, 2(2), 122–142.
- Lee, C. C. K., & Conroy, D. M. (2005). Socialization through consumption: Teenagers and the Internet. *Australasian Marketing Journal*, 13(1), 8–19.
- Lehdonvirta, V., Wilska, T., & Johnson, M. (2009). Virtual consumerism. *Information, Communication & Society*, 12(7), 1059–1079.
- Li, D., Chau, P. Y. K., & Van Slyke, C. (2010). A comparative study of individual acceptance of instant messaging in the US and china: A structural equation modeling approach. *Communications of the Association for Information Systems*, 26(5).
- Lin, C., & Bhattacharjee, A. (2008). Elucidating individual intention to use interactive information technologies: The role of network externalities. *International Journal of Electronic Commerce*, 13(1), 85–108.
- Lin, C., & Bhattacharjee, A. (2010). Extending technology usage models to interactive hedonic technologies: A theoretical model and empirical test. *Information Systems Journal*, 20(2), 163–181.
- Malhotra, N. K., Kim, S. S., & Patil, A. (2006). Common method variance in IS research: A comparison of alternative approaches and a reanalysis of past research. *Management Science*, 52(12), 1865–1883.
- Mäntymäki, M., & Salo, J. (2011). Teenagers in social virtual worlds: Continuous use and purchasing behavior in Habbo Hotel. *Computers in Human Behavior*, 27(6), 2088–2097.
- Marcia, J. E. (1980). Identity in adolescence. In J. Adelson (Ed.), *Handbook of adolescent psychology* (pp. 109–137). New York, NY: Wiley & Sons.
- Maslow, A. H. (1954). *Motivation and personality*. New York, NY: Harper & Row, Publishers, Inc.
- McKenna, K. Y., & Bargh, J. A. (1998). Coming out in the age of the Internet: Identity "demarginalization" through virtual group participation. *Journal of Personality and Social Psychology*, 75(3), 681.
- Merikivi, J., Verhagen, T., & Feldberg, F. (2013). Having belief(s) in social virtual worlds: A decomposed approach. *New Media & Society*, 15(7), 1168–1188.
- Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A source book of new methods*. Newbury Park, CA: SAGE Publications.
- Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192–222.
- Morrow, V., & Richards, M. (1996). The ethics of social research with children: An overview. *Children & Society*, 10(2), 90–105.
- Morse, J. M. (2003). Principles of mixed method and multi-method research design. In A. Tashakkori, & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: SAGE Publications.
- Nah, F. F., Eschenbrenner, B., & DeWester, D. (2011). Enhancing brand equity through flow and telepresence: A comparison of 2D and 3D virtual worlds. *MIS Quarterly*, 35(3), 731–A19.
- Nevo, S., Nevo, D., & Kim, H. (2012). From recreational applications to workplace technologies: An empirical study of cross-context IS continuance in the case of virtual worlds. *Journal of Information Technology*, 27(1), 74–86.
- Palfrey, J., & Gasser, U. (2008). *Born digital: Understanding the first generation of digital natives*. New York, NY: Basic Books.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5).
- Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing*, 26(4), 332–344.
- Rheingold, H. (2000). *The virtual community: Homesteading on the electronic frontier*. Cambridge, MA: MIT Press.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.
- Ruggiero, T. E. (2000). Uses and gratifications theory in the 21st century. *Mass Communication & Society*, 3(1), 3–37.
- Santrock, J. W. (2008). *Adolescence*. New York, NY: McGraw-Hill.
- Saunders, C., Rutkowski, A. F., van Genuchten, M., Vogel, D., & Orrego, J. M. (2011). Virtual space and place: Theory and test. *MIS Quarterly*, 35(4), 1079–1098.
- Schwarz, A., Schwarz, C., Jung, Y., Perez, B., & Wiley-Patton, S. (2012). Towards an understanding of assimilation in virtual worlds: The 3C approach. *European Journal of Information Systems*, 21(3), 303–320.
- Shelton, A. K. (2010). Defining the lines between virtual and real world purchases: Second life sells, but who's buying? *Computers in Human Behavior*, 26(6), 1223–1227.
- Shen, X., Cheung, C. M. K., & Lee, M. K. O. (2013). Perceived critical mass and collective intention in social media-supported small group communication. *International Journal of Information Management*, 33(5), 707–715.
- Shin, D. (2009). The evaluation of user experience of the virtual world in relation to extrinsic and intrinsic motivation. *International Journal of Human-Computer Interaction*, 25(6), 530–553.
- Stafford, T. F., Stafford, M. R., & Schkade, L. L. (2004). Determining uses and gratifications for the Internet. *Decision Sciences*, 35(2), 259–288.
- Subrahmanyam, K., Garcia, E. C. M., Harsono, L. S., Li, J. S., & Lipana, L. (2009). In their words: Connecting on-line weblogs to developmental processes. *British Journal of Developmental Psychology*, 27(1), 219–245.
- Subrahmanyam, K., Reich, S. M., Waechter, N., & Espinoza, G. (2008). Online and offline social networks: Use of social networking sites by emerging adults. *Journal of Applied Developmental Psychology*, 29(6), 420–433.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of inter-group behavior. In S. Worchel, & L. W. Austin (Eds.), *Psychology of intergroup relations* (pp. 7–24). Chicago, IL: Nelson-Hall.
- Taylor, S., & Todd, P. (1995). Assessing IT usage: The role of prior experience. *MIS Quarterly*, 19(4), 561–570.
- Van Slyke, C. (2007). Perceived critical mass and the adoption of a communication technology. *European Journal of Information Systems*, 16(3), 270–283.
- Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 11(4), 342–365.
- Venkatesh, V., & Brown, S. A. (2001). A longitudinal investigation of personal computers in homes: Adoption determinants and emerging challenges. *MIS Quarterly*, 25(1), 71–102.

- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157–178.
- Verhagen, T., Feldberg, F., van den Hooff, B., Meents, S., & Merikivi, J. (2012). Understanding users' motivations to engage in virtual worlds: A multi-purpose model and empirical testing. *Computers in Human Behavior*, 28(2), 484–495.
- Vodanovich, S., Sundaram, D., & Myers, M. (2010). Digital natives and ubiquitous information systems. *Information Systems Research*, 21(4), 711–723.
- Wasko, M., Teigland, R., Leidner, D., & Jarvenpaa, S. (2011). Stepping into the Internet: New ventures in virtual worlds. *MIS Quarterly*, 35(3), 645–652.
- Werner-Wilson, R., Fitzharris, J. L., & Morrissey, K. M. (2004). Adolescent and parent perceptions of media influence on adolescent sexuality. *Adolescence*, 39(154), 303–313.
- Xu, C., Ryan, S., Prybutok, V., & Wen, C. (2012). It is not for fun: An examination of social network site usage. *Information & Management*, 49(5), 210–217.
- Yoo, Y., & Alavi, M. (2001). Media and group cohesion: Relative influences on social presence, task participation, and group consensus. *MIS Quarterly*, 25(3), 371–390.
- Zhao, S. (2005). The digital self: Through the looking glass of telecopresent others. *Symbolic Interaction*, 28(3), 387–405.
- Zhou, Z., Fang, Y., Vogel, D. R., Jin, X., & Zhang, X. (2012). Attracted to or locked in? Predicting continuance intention in social virtual world services. *Journal of Management Information Systems*, 29(1), 273–306.
- Zhou, Z., Jin, X., Vogel, D. R., Fang, Y., & Chen, X. (2011). Individual motivations and demographic differences in social virtual world uses: An exploratory investigation in second life. *International Journal of Information Management*, 31(3), 261–271.

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