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C. Mo Bahk

California State University, San Bernardino

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Reliance, Immersion, and Enjoyment: An Exploratory Socio-Psychological Analysis on Internet Involvement

C. Mo Bahk

California State University, San Bernardino

USA

mbahk@csusb.edu

ABSTRACT

The purpose of this paper is to explore the relationships between various socio-psychological variables and the level of involvement in the Internet. Two hundred thirty-four college students completed a self-administered questionnaire that contains the measures of Internet involvement, Internet usage, face-to-face interaction anxiety, computer ownership, and socio-demographic variables. A factor analysis identified three dimensions of Internet involvement: Reliance, Immersion, and Enjoyment. The results of stepwise regressions showed that face-to-face interaction anxiety is a significant indicator of both the Reliance and Immersion dimensions of Internet involvement. Age was another positive indicator of the Immersion dimension, whereas computer ownership contributed significantly to the prediction of the Reliance dimension of Internet involvement. The Enjoyment dimension was not significantly affected by any of the independent variables.

INTRODUCTION

The Internet has reshaped traditional forms and practices of human interaction and information management. Recent advancements in information and communication technology (ICT) have been vastly aided by the utilization of this new medium. The Internet-based World Wide Web (WWW) has prompted new forms of real time and pass time activities in today's world. Tapscott and Williams (2006) contend that the Internet provides us with opportunities to "participate" rather than passively receive information whether we create, share, or socialize. We can now participate in both synchronous and asynchronous communication with all those who are connected to the Internet, which is the interactive world-wide network of computers. For instance, we can electronically send and receive personal and non-personal messages (Email), post and read group-oriented messages (Newsgroups/Bulletin Boards), converse in real time with others (Live Chats/Instant Messaging), access messages of information, persuasion, instruction, and entertainment available on the Web (Web Surfing/Browsing), and author our own website with text, photos, videos, and audio/music (Blogging/Social Networking). The diffusion of this innovative medium has been surprisingly faster than any other mass-oriented media. Koss (2001), for instance, estimated that it took the radio 38 years, and television 13 years, to reach 50 million users, whereas the Internet was adopted by 50 million users in just four years. With ever growing computer ownership/availability and Internet accessibility, the involvement with this new medium is also expected to exhibit varying levels and patterns among users. The purpose of the present paper is to explore the relationships between various socio-psychological factors and Internet involvement.

Sociodemographics and Internet Involvement

The Internet has often been regarded as engendering what we call the "digital divide," defined as "differential access to various forms of technology---particularly the Internet---among various demographic groups" (Lindsay & Poindexter, 2003, p. 113). A considerable volume of articles and reports have attested that the access inequity exists among various socio-demographic sectors involving gender, race, ethnicity, age, income, and geographic location (Cooper, 2006; Hoffman & Novak, 1998; Jackson, Ervin, Gardner, & Schmitt, 2001; Loges & Jung, 2001;

Mossberger, Tolbert, & Stansbury, 2003; Selwyn, 2004; Warschauer, 2003). On the other hand, recent studies have also indicated that the gaps are closing with the Internet usage by groups on previously lower-ends of the divide rising rapidly (Cotten & Jelenewicz, 2008; Eamon, 2004; Hanauer, Dibble, Fortin, & Col, 2004; Shaw & Gant, 2002; Trotter, 2003).

Discourse on the digital divide relates to whether it is preexisting social conditions or personal preferences that determine the usage of computers and the Internet (C&I). Believers in the digital divide point to socio-structural inequalities that produce variations in Internet access (i.e., relatively lower rates of computer ownership and Internet connection) and in Internet-related skills or literacy (i.e., lack of opportunities to learn to use computers and the Internet), particularly among people who belong to certain socio-demographic sectors such as women, non-whites, old people, low-income earners, and rural residents. However, as the Internet becomes pervasive among all sectors of these distinctions with the gaps closing rapidly, it is rather personal choices and preferences that would more likely determine the actual usage of the Internet as with the usage of other ubiquitous media such as the radio and television. It is important to note that there has been an increasing emphasis on the role of personal preferences in choosing to use online (Internet) over off-line (traditional) channels of communication (Hargittai, 2008). Hence, it is important to examine whether there are still disparities in the usage of the Internet among various sectors of the population, involving gender, age, race, socio-economic status, etc.

The present study introduces the construct of Internet involvement as an index of Internet usage. Internet involvement can be conceptually defined as the extent to which an individual gets involved in the usage of the Internet in their daily lives. Even among individuals with similar privileges of Internet access and similar levels of Internet-related knowledge and skills, there still can be individual differences in the adoption, acceptance, and utilization of the medium in their daily activities. Utilizing this construct, this study examines the relationships between various sociodemographic variables and Internet involvement by the following research questions:

- RQ1: Are males and females different in the level of Internet involvement?
- RQ2: Is age related to the level of Internet involvement?
- RQ3: Are there disparities between Whites and non-Whites in the level of Internet involvement?
- RQ4: Is marital status related to the level of Internet involvement?
- RQ5: Is computer ownership related to the level of Internet involvement?

Face-To-Face Interaction Anxiety and Internet Involvement

One psychological variable that has been most researched in relation to Internet usage is social interaction anxiety/apprehension, often indexed as shyness or social anxiety. Research has hypothesized and empirically tested the relationships between shyness or social anxiety and Internet usage or Internet addiction (IA)/problem Internet use (PIU) (Caplan, 2007). Chak and Leung (2004), for example, reported that the higher the shyness, the higher the addictive usage of the Internet. Socially fearful or anxious individuals were also found to benefit from using the Internet for interaction purposes (Campbell, Cumming, & Hughes, 2006; Madell & Muncer, 2006). The results of these studies suggest that individuals with high levels of face-to-face interaction anxiety tend to use the Internet more heavily.

Prior studies have often used the amount of Internet usage as the dependent measure. Although it is a significant indicator of the involvement in the Internet especially among problematic Internet users, the amount of time spent using the Internet can easily be confounded with other variables such as time allowances or restraints imposed by life's complexities. Hence, it is important to re-examine the relationship between face-to-face interaction anxiety involving shyness and social anxiety and Internet involvement as an index of Internet usage. The construct of Internet involvement relates to the extent to which an individual accepts and utilizes the Internet in her/his daily activities. It is also plausible that Internet involvement can be a multi-dimensional construct. Therefore, the following research question and hypothesis are formulated:

- RQ6: Are there underlying dimensions of Internet involvement?
- H1: Face-to-face interaction anxiety is positively associated with Internet involvement.

METHOD

Two hundred thirty-four college students were recruited from undergraduate classes at a West Coast university. Students were given extra course credit in exchange for their participation. The mean age was 24.5 (SD = 7.5); 66% were female, 96% were US citizens, 9% were married, and 55% identified themselves as White. Subjects responded to a self-administered questionnaire that contains the measures of Internet involvement, Internet usage, and demographic variables. Subjects indicated their gender, age, marital status, and race as well as whether they own a computer or not. The actual usage of the Internet was measured by asking the participants how many hours and minutes a day they typically spend using the Internet.

Internet involvement and face-to-face interaction anxiety were measured by Likert-type scales: Internet Involvement Scale (IIS) and Face-to-Face Interaction Anxiety Scale (FFIAS). The IIS is a 12-item Likert-type scale measuring the extent to which the subject is involved in the Internet (Bahk & Rohm, in press). Subjects indicated the degree to which they agree or disagree with each of the 12 statements relating to their involvement in the Internet by marking an appropriate point on a 5-point scale ranging from *strongly disagree* (1) to *strongly agree* (5). The scale includes such items as "I feel like I cannot live even one day without using the Internet," "When I use the Internet, I get so involved that I feel time runs very fast," and "I always enjoy surfing Web sites." The FFIAS is a 10-item Likert-type scale adapted from Booth-Butterfield and Gould's (1986) CAI (Communication Anxiety Inventory). Subjects indicated their agreement or disagreement with each of the six statements on a 5-point scale ranging from *strongly disagree* (1) to *strongly agree* (5). The scale includes such items as "I'm not good at initiating face-to-face interaction with new people," "Generally, I am tense and nervous while participating in face-to-face group discussions," and "While conversing with someone of my romantic interest, I feel tense and nervous." An internal reliability of the measure was $\alpha = .78$.

RESULTS

All 234 respondents indicated that they had access to the Internet at home and/or in school; 216 of them (92.6%) had their own computer. The students reported that they use the Internet for an average of 85.2 minutes (SD = 86.6) on a typical day. The results of independent-samples *t*-tests and one way ANOVAs revealed no statistically significant ($p < .05$) differences in computer ownership and Internet usage time based on gender, race, and marital status.

Responses to the 12 items measuring the level of involvement in the Internet were factor analyzed to identify underlying dimensions. A principal-components analysis followed by equamax rotation was performed on the 12-item measure. Three factors had eigenvalues greater than 1.00 (Cumulative Percent of Variance = 64.3). Table 1 presents factor loadings for each of the items in relation to the dimension in which it is factor loaded most highly and greater than .40. The first dimension, labeled "Reliance" (Eigenvalue = 4.82), relates to how dependent the subject feels on the Internet, i.e., how significant the Internet is in their everyday lives. The internal reliability of this subscale was $\alpha = .84$. The second dimension, "Immersion" (Eigenvalue = 1.74; $\alpha = .81$), refers to the absorbing aspect of Internet involvement, i.e., how attentive and engrossed the subject becomes when she/he uses the Internet. The third dimension, "Enjoyment" (Eigenvalue = 1.16; $\alpha = .73$), focuses on how much they relish and enjoy.

Table 1: Factor Loadings and Inter-item Reliability for Dimensions of Internet Involvement^a

Factor	Eigen-value	Alpha	Factor Loading	Statement
1. Reliance	4.82	.84	.80	1. I feel like I cannot live even one day without using the Internet.
			.75	2. Using the Internet occupies a significant portion of my daily living.
			.70	3. I like using the Internet much more than any other pass time activities.
			.68	4. I would feel really frustrated if my Internet connection doesn't work for a few days.
			.66	5. I tend to use the Internet much more than other traditional media.
			.47	6. I can stay home all day alone if I use the Internet.
2. Immersion	1.74	.81	.89	1. I'm always eager to search for interesting things on the Internet.
			.87	2. When I use the Internet, I get so involved that I feel time runs very fast.
			.73	3. Because of my Internet usage, I spend less time interacting face-to-face with my family members.
3. Enjoyment	1.16	.73	.82	1. I always enjoy surfing Web sites.
			.81	2. I like engaging in real time interactions with others through using chatroom and instant messaging.
			.67	3. I really do not welcome any visitors when I use the Internet.

^aCumulative percent of variance = 64.3 (N = 234)

Internet activities such as surfing websites and engaging in real time interaction with others via chatroom and instant messaging.

The subscale indices of Internet involvement were obtained for the three dimensions by averaging responses to items belonging to each dimension. Scores on these subscales were found to be significantly correlated with the daily Internet usage time ($r = .40, p < .01$ for Reliance; $r = .25, p < .01$ for Immersion; $r = .35, p < .01$ for Enjoyment). Research Questions 1-5 concern whether Internet involvement is related to sociodemographic factors such as gender, age, race, marital status, and computer ownership. T-tests on means for the subscale indices of Internet involvement revealed that there were no significant differences between males and females in any of the three dimensions (see Table 2). Table 3 shows Pearson

Table 2. T-Tests on Mean Differences in Internet Involvement Scores and Internet Usage Time between Males and Females.

	Males	Females	t	p
¹ Computer Ownership	.96 ^a (.19) ^b	.90 (.30)	1.60	.111 ^c
² Daily Internet Usage	98.39 (94.14)	78.33 (81.91)	1.66	.099
³ Internet Involvement				
<i>Reliance</i>	2.81 (1.13)	2.83 (1.11)	-.14	.885
<i>Immersion</i>	2.16 (1.06)	1.94 (.96)	.64	.102
<i>Enjoyment</i>	3.39 (.92)	3.29 (.95)	.75	.451

¹Yes = 1, No = 0. ²in minutes. ³5-point scale (maximum=5, minimum=1). ^aMean. ^bStandard Deviation. ^cnot statistically significant (p > .05, two-tailed). N = 234.

correlations between each of the three subscale scores and each of the independent variables including gender, age, marital status, whiteness, computer ownership, and face-to-face interaction anxiety. Responses to the marital status question were recoded into a dummy variable so that the value can be either "1" (married) or "0" (not married, i.e., single/divorced/ separated). Responses to the race question were recoded into another dummy variable, called whiteness, so that the value can be either "1" (white) or "0" (non-white). Computer ownership (i.e., whether the subject has his/her own computer) as a variable has two values: "1" (Yes) and "0" (No). The results indicate that except for age and computer ownership sociodemographic variables including gender, race (whiteness), and marital status were not correlated with any of the three dimensions of Internet involvement.

To further examine the significance of each of the independent variables in predicting scores on each of the dimensions research, stepwise multiple regression analysis were conducted. Predictor variables were selectively entered into the equation in order of the magnitude of their contribution. The final step results of the regressions are presented in Table 4. The results show that computer ownership (i.e., whether the subject has her/his own computer) ($\beta = .144$) and face-to-face interaction anxiety ($\beta = .138$) are positive indicators of the *Reliance* dimension of Internet involvement. The two variables accounted for 3% of the variance in the level of "reliance" on the Internet (Adjusted $R^2 = .031$, $F = 4.62$, p

Table 3: Correlations of Internet Involvement Dimensions with Independent Measures.

	Reliance	Immersion	Enjoyment
1. Gender ^a	-.02	.12	.06
2. Age	.04	.18*	.06
3. Marital Status ^b	.06	.04	.07
4. Computer Ownership ^c	.14*	-.02	.12
5. Whiteness ^d	-.07	.05	.03

6. ¹ F-t-F Interaction Anxiety	.14*	.21**	-0.03
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Note. ¹Index of face-to-face interaction anxiety was scored such that higher numbers indicate greater shyness (maximum = 5, minimum = 1). ^aMale = 1; Female = 0. ^bMarried = 1; Not Married = 0 (i.e., Single, Divorced, or Separated). ^cYes = 1; No = 0. ^dWhite = 1; Non-White = 0. *p < .05 **p < .01 (Two-tailed)

Table 4: Results of Stepwise Multiple Regressions on Internet Involvement Dimensions.

Dimensions	Independent Variables	Beta	t	p
Reliance	Computer Ownership	.144	2.20	.029
	F-t-F Interaction Anxiety	.138	2.10	.037
Adjusted $R^2 = .031$ $F = 4.62; p < .05$				
Immersion	F-t-F Interaction Anxiety	.215	3.35	.001
	Age	.181	2.82	.005
Adjusted $R^2 = .070$ $F = 10.78; p < .01$				

Note. No variable was selected for the *Enjoyment* dimension. $N = 234$.

< .05). The findings indicate that when a person has her/his own computer, she/he is slightly more likely than others to become dependent on the Internet and that the greater the level of face-to-face interaction anxiety, the greater the level of “reliance” on the Internet. All other variables such as gender, age, marital status, whiteness, and face-to-face interaction anxiety were found to be non-significant predictors of this dimension. As for the Immersion dimension of Internet involvement, two variables were found to be positive indicators: age ($\beta = .181$) and face-to-face interaction anxiety ($\beta = .215$). These two variables accounted for 7% of the variance in the Immersion dimension of Internet involvement (Adjusted $R^2 = .070$, $F = 10.78$, $p < .01$). The findings indicate that the older a person is, the more immersed she/he becomes in the Internet and that the greater the level of face-to-face interaction anxiety, the greater the level of immersion in the Internet. As for the *Enjoyment* dimension of Internet involvement, no variable was found to be a statistically significant predictor. The findings suggest that the *Enjoyment* dimension of Internet involvement is not affected by sex, age, marital status, whiteness, computer ownership, and the level of face-to-face interaction anxiety. Hence, Hypothesis 1 is partially supported.

DISCUSSION

The results of the present study indicate that Internet involvement is a multi-dimensional construct. The three dimensions of Internet involvement were identified as *Reliance*, *Immersion*, and *Enjoyment*. The *Reliance* dimension of Internet involvement relates to the extent to which an individual is dependent on the Internet as an essential tool for living. This aspect of Internet involvement is associated significantly with computer ownership and face-to-face interaction anxiety. Computer owners and those with high levels of face-to-face interaction anxiety seem more likely to become dependent on the Internet. The *Immersion* dimension concerns how attentive and

engrossed the subject becomes when she/he uses the Internet. The results of multiple regressions suggest that older students and those with high levels of face-to-face interaction anxiety are more likely to get immersed while using the Internet. The *Enjoyment* dimension was not found to be affected by any of the independent measures. Considering that the scores on this dimension were higher than those on the other dimensions, the students seem to enjoy using the Internet regardless of whether they have their own computer, whether they are male, young, white, or married, or whether they have high levels of face-to-face interaction anxiety, or not.

The present data provide little support for the digital divide. Internet access and usage appear to have become pervasive among college students. The association found between face-to-face interaction anxiety and Internet involvement (*Reliance* and *Immersion*, in particular) found in the present study is consistent with prior findings (e.g., Ebeling-Witte, Frank & Lester, 2007; Yuen & Lavin, 2004). Individuals who feel difficulty in face-to-face interaction with others appear to rely more on the Internet as a tool of daily living and get immersed to greater degree when using the Internet. Hence, utilizing the construct Internet involvement, the present study provides support for the previous findings about the relationships between social anxiety or shyness and the usage of the Internet.

It is important, however, to discuss the limitations of the present investigation. First, it must be acknowledged that the present data are based on self-report responses of 234 college students from one university in a West Coast region in the United States. Hence, the findings of this study ought to be interpreted with caution, especially in generalizing the results. Future studies need to expand the research to include people from other various sectors of the population, in terms of age, education, household income, regions, etc. It is also recommended that future research incorporate other types of data collection methods, not solely relying on self-report data. Nonetheless, the construct and measure of Internet involvement, i.e., involvement in the Internet as a medium or tool of daily living have potential to contribute to furthering research on various Internet usage patterns. Future research can also benefit from refining and expanding the construct to reflect more specific aspects of Internet usage such as interacting, gaming, news/information seeking, education, persuasion, and entertainment.

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