The 9th International Conference on e-Business (iNCEB2010)
November 18th – 19th, 2010

Applying Subjective Leisure Scale to Pleasure-Oriented Text Messaging

Pruthikrai Mahatanankoon
Illinois State University
pmahata@ilstu.edu

Abstract

Recent development of innovative, playful and aesthetically designed mobile devices provide interactive enjoyment and pleasure to consumers. These playful text messaging behaviors have attributes similar to leisure activities. In this study, the Subjective Leisure Scale (SLS)—a survey instrument used to measure activities related to physical recreation and playful behaviors—is used to capture several aspects of pleasure-oriented text messaging activities: intrinsic motivation, perceived freedom, involvement, arousal, mastery and spontaneity. Using a sample of everyday pleasure-oriented text messaging users, principle component analysis (PCA) revealed that only freedom, mastery, involvement and spontaneity captured the nature of text messaging behaviors. Evidence suggests that future practitioners and researchers will apply this set of variables to mobile entertainment and other consumer-based information communication technologies (ICTs).

1. Introduction

Advances in information technology are changing the basic utility-based behaviors by integrating telecommunications and computing power into small, yet powerful smart devices. Nowadays, these mobile devices are everywhere fueling, the societal needs for communication, information and entertainment. The recent integration of information communication technologies (ICTs) within smartphones, gaming devices, GPS and digital readers allow consumers to access a vast array of data and information.

Such technological convergence motivates researchers and practitioners to reexamine the non-traditional determinants of information communication technologies (ICTs) usage. As the boundary between utility and 'fun' diminishes, users' behaviors have increasingly become more unpredictable and continue to expand to different context, situation and tasks. Many information systems researchers acknowledge the intricacies of information technology adoption frameworks and advocate that some of the foundational theories of technology adoption may be too simplistic to explain the playful nature of these modern handheld devices [1]. The utilitarian and playful usages of mobile devices usage definitely parallel the consumer-based products [2], which involve several functionalities of information communication technologies (ICTs).

Nevertheless, one of the main enablers of consumer-based ICTs is the widespread use of mobile text messaging. Text messaging (SMS)—an efficient, asynchronous communication via mobile devices—is one of most effective ways to reach the global population. As of December 2009, the International Association for the Wireless Telecommunications Industry (CTIA) found that the U.S. population sends nearly 153 billion text messages each month. With over 285 million mobile users, it can be used as a mass marketing campaign [3]. While 72 percent of mobile users engage in text messaging activities, Pew Research Center also shows that the percentage increases to 95 percent for young adults—18-29 year olds [4]. Text messaging can also be quite enjoyable and mentally engaging when utilized beyond basic communication activities. It is used by avid text messaging users for non-communication activities—providing a sense of relatedness, pleasure and entertainment. According to Pew Research Center [4], 19 percent of young adults use text messaging to make charitable donations while 21 percent use it to update their personal status.

While the diffusion of mobile commerce is fueled by both the utilitarian and playful nature of devices and applications [2], this study investigates only pleasure-oriented text messaging behaviors and argues that the exploitation of text messaging for entertainment, enjoyment or any non-utilitarian ICTs purposes captures users' psyche similar to other subjective leisure activities. *Pleasure-oriented text messaging* is defined as playful, exploratory and

recreational use of SMS—signifying that it also serves as an enabler to non-utilitarian ICTs. By uniquely examining text messaging in the context of consumer-based ICTs, the study sets itself apart from other utilitarian information technology acceptance research [5]. The objective of this study, therefore, is to apply Subjective Leisure Scale (SLS) to pleasure-oriented texting behaviors. The next section describes the SLS and its definitions.

2. Subjective leisure scale (SLS)

To support our previous argument that pleasure-oriented text messaging behaviors have similar aspects of subjective leisure activities, the study modified Unger and Kernan's [6] Subjective Leisure Scale (SLS), which is intended to measure an individual's perceptions of free time, recreation activities, pleasurable and self-gratifying behaviors. There are six sub-scales related to subjective leisure activities and definitions [6, p. 382-383]:

- Intrinsic motivation—an activity that is an end in itself, offering a sense of intangible personal reward, satisfaction and self-esteem
- Perceive freedom—an activity that is perceived as "voluntary, without coercion or obligation," or the freedom to pursue enjoyable tasks
- Involvement—an activity that requires "high involvement and total absorption" to an extent that one forgets his/her physical environment
- Arousal—an activity that stimulates one's sense leading to "novelty-seeking, exploration, and risk-taking behaviors"
- Mastery—an activity that "one has the opportunity to test one's self or conquer the environment"
- Spontaneity—an activity that cannot be anticipated or planned ahead of time

From the definitions of SLS sub-scales, the quintessence of subject leisure activities is seemingly applicable to consumer-based ICTs. For example, a person can be in a "subjective leisure" state via causal Internet surfing. Using basic computer skills (*mastery*) and the liberty (*perceived freedom*) to pursue one's interest (*intrinsic motivation*), the person can lose track of time (*involvement*) while inadvertently exploring (*spontaneity*) and seeking different websites that simulate his/her mind (*arousal*). Research shows that stimulating and interactive web stores increase pleasure and arousal among recreational online shoppers [7]. Instant messaging (IM) is another example that encourages distant communication partners to share ideas, data and information in real time (*perceived freedom*). In hindsight, non-utilitarian IM users can engaging in various stimulating chat activities (*arousal*) based on their common interests (*intrinsic motivation*). They can simply turn-off their IM application or filter their communication partners (*mastery*) if desired. While actively chatting—often without the awareness of passing time (*involvement*), IM applications often send a signal to other active users or acknowledge any pending requests to join the conversation (*spontaneity*).

In the case of text messaging, all of these sub-scales seemingly contribute to excessive pleasurable 'texting'. A person receiving text messaging from friend or family is often unplanned (*spontaneity*). At the same time, the person has the autonomy (*perceived freedom*) to send a reply during the right circumstance, given his/her ability to text and respond to the message in an efficient manner (*mastery*). In some cases, text messaging provides interactive engagement with reality TV shows, active gambling and gaming scenarios, casting votes or expressing ideas/opinions (*intrinsic motivation* and *arousal*), all of which generally require attention and focus (*involvement*). These psychosocial outcomes of mobile device usage can be described as "a simultaneous sense of freedom" coupled with "a sense of captivity owing to the compulsiveness of responding to communication initiated by others at any or every time" [8, p.39]. Moreover, design aesthetics has significant impact on users' loyalty toward mobile services [9], while cognitive absorption and playfulness have been shown to influence users' tendency to adopt mobile devices [10]. Previous studies on electronic commerce also argue that certain aspects of intrinsic motivation are related to perceived ease of use and interface quality of online businesses [11].

Based on the previous empirical evidence, the study proposes that pleasure-oriented text massaging users demonstrate some of the common attributes found in subjective leisure activities. The next section describes the methods conducted to validate the justification.

3. Data Collection

E-mail solicitation pointing to a web-based survey was sent to a mass mailing list of approximately 19,000 students at a large public university in the United States, with the focus on everyday pleasure-oriented text messaging activities. Additional questions assisted in the elimination of infrequent text messaging users and other purposeful text messaging behaviors, such as businesses or work-related communications. As a result, a total of 216 respondents—mainly female

(81.5%)—were used in this study. The majority had completed high school and were currently taking undergraduate classes—only 18.6 percent of the respondents were graduate students. The respondents' ages were 17-20 (64.4%), 21-25 (28.2%), 26-30 (4.6%) and over 31 (2.8%). To ensure that the heterogeneity of our respondents would not influence the result, the study conducted ANOVA tests on all of the SLS variables, gender, age and education. The ANOVA tests revealed significant differences for IS2 ($F=5.06$, $p<.05$) on gender and for AR3 ($F=4.29$, $p<.05$), IN3 ($F=8.26$, $p<.01$), IS3 ($F=9.37$, $p<.01$) on education.

4. Data Analysis

Our principle component analysis (PCA), a variation of factor analysis, followed the procedures recommended by Field [12]. A 9-to-1 ratio of respondents to questionnaire items was within an acceptable sample size for exploratory factor analysis [13]. First, the study examined the inter-correlation between questionnaire items. The initial purpose was to exclude any items that were not correlated or highly correlated with any other variables. Correlation matrix indicated no highly correlated items ($R>.9$; $p< .05$). The statistics identified low correlation ($R< .4$) of IS2, PF2, AR2, and SP1 to the overall scale (correlation matrix), so these items were eliminated from further analysis (see 9. Appendix). Second, with eigenvalues greater than 1, there were five factors extracted from the initial factor analysis. A closer examination of scree plot also revealed two inflexions at three and five factors—suggesting that three to five factors might be appropriate. Third, to determine the appropriate factors, the study consulted the original SLS sub-scales [6]; thereby, eliminating any items with small communalities and/or significant cross-loadings with other sub-scales (>.40). Given the fact that IS1 had significant cross-loading and IS3 had low communalities (due to elimination of IS2 earlier) the study had to remove *intrinsic motivation* from the study. In addition, AR1, AR3 and SP2 also loaded significantly onto *involvement*, and were dropped for SLS sub-scales consistency.

The final component factor analysis yielded a four-factor solution with eigenvalues above 1.12. A value of .729 for Kaiser-Meyer-Olkin's measure of sampling adequacy supported 'good' distinct and reliable factors [14] with a highly significant Bartlett's test for sphericity ($p < .001$). Anti-image correlation showed that these items had a value above 0.5, suggesting the appropriateness of these factors [12]. The four factors retained represent 74 percent of the variance of the SLS scale. The composite reliability—Cronbach's alpha—fell within acceptable limits for exploratory research (>.60). The results of the final component factor analysis are shown in Table 1.

SLS Sub-Scale	Varimax-Rotated Loadings				Communality	α
	F 1	F 2	F 3	F 4		
FR1	*.749*	.066	.002	-.033	.566	.702
FR3	*.768*	.024	.145	-.077	.617	
FR4	*.851*	-.081	.033	.126	.747	
IN1	-.049	*.859*	.068	.085	.752	.834
IN2	.010	*.816*	-.020	.175	.697	
IN3	-.009	*.758*	.134	.048	.594	
IN4	.085	*.784*	-.004	.237	.678	
MA1	.038	.092	*.924*	.016	.865	.932
MA2	.057	.016	*.943*	-.024	.893	
MA3	.108	.057	*.933*	.073	.891	
SP3	-.011	.411	-.038	*.769*	.762	.749
SP4	.006	.125	.082	*.920*	.868	

Table 1 Principle Component Analysis (n=216)

5. Result Validation

The study validated the results by randomly splitting the sample into two equal parts of the 108 respondents. Both samples resulted in a four-factor solution with eigenvalues of 1.16 and 1.12, respectively. The KMO statistics for data set 1 was .677, while data set 2 produced .715. Bartlett's tests also were highly significant ($p <.001$). Composite reliability (>.60) and anti-image correlation (<.50) confirmed the appropriateness of the four-factor solutions in both samples [12]. The four factors generated represent roughly 74 percent and 75 percent of the variance of the SLS scale in both samples, respectively. Table 2 shows the results of the two separate principle component analysis.

Predictive validity was performed on the split samples. During the data collection procedure, users' intention to engage in text messaging behavior (INT) was also collected. The same respondents were asked about their text messaging activities. These questions include: "I predict I would send/receive text messages through my mobile phone in the future," "I intend to send/receive text messages via my mobile phone in the future," "I plan to send/receive text messages using my mobile phone in the future." The purpose of this additional data analysis was to compare the original SLS scale against the post-factor analysis SLS scale. Table 3 reveals that the post-factor analysis scale is a

better predictor of the intention to engage in text messaging activities. Although the original scale also significantly predicted INT, the post-factor analysis scale captured nearly three times the variance in user intention when intrinsic motivation and arousal sub-scales were eliminated.

Sample Set 1, n=108	Varimax-Rotated Loadings				Communality	α
	F 1	F 2	F 3	F 4		
FR1	*.776*	-.005	.058	-.149	.628	.742
FR3	*.780*	.041	.150	-.024	.633	
FR4	*.860*	-.066	.080	.157	.775	
IN1	-.097	*.856*	.116	.055	.758	.818
IN2	.043	*.753*	-.133	.341	.703	
IN3	-.066	*.783*	.195	-.048	.658	
IN4	.136	*.746*	-.060	.308	.673	
MA1	.098	.059	*.906*	.034	.834	.929
MA2	.088	.036	*.952*	.007	.915	
MA3	.137	.047	*.917*	.085	.868	
SP3	-.072	.414	.054	*.757*	.752	.769
SP4	.006	.083	.082	*.918*	.856	
Sample Set 2, n=108	Varimax-Rotated Loadings				Communality	α
	F 1	F 2	F 3	F 4		
FR1	*.733*	.131	-.037	.099	.566	.660
FR3	*.737*	.023	.149	-.181	.598	
FR4	*.842*	-.113	-.006	.088	.729	
IN1	-.023	*.871*	.033	.128	.777	.852
IN2	-.012	*.867*	.061	.050	.759	
IN3	.038	*.733*	.092	.156	.571	
IN4	.062	*.807*	.027	.225	.706	
MA1	-.010	.126	*.934*	.000	.889	.935
MA2	.039	.004	*.933*	-.043	.874	
MA3	.078	.063	*.944*	.067	.905	
SP3	.031	.384	-.100	*.783*	.771	.729
SP4	-.004	.141	.097	*.893*	.827	

Table 2 PCA of Split Samples

Original SLS Scale					
Sample	F	*t*	*β*	*p*	R^2
Set 1	4.384	2.094	.199	.039	.040
Set 2	6.511	2.552	.241	.012	.058
Combined	10.79	3.285	.219	.001	.048
Post-PCA SLS Scale					
Sample	F	*t*	*β*	*p*	R^2
Set 1	17.487	4.132	.376	<.001	.142
Set 2	17.488	4.182	.376	<.001	.142
Combined	34.567	5.879	.373	<.001	.139

Table 3 MLR of Original and Post-PCA Scales

6. Discussion and implications

Previously, the study proposed that avid, pleasure-oriented messaging behaviors have similar aspects of subjective leisure. The results from principle component analysis partially support this view, suggesting that pleasure-oriented text messaging behaviors are unrelated to intrinsic motivation and arousal. There are several reasons for this finding:

1. Communicating via text messaging is not an end in itself, but a means to achieved personal communication goals. A person may not desire to engage in voice communication or be in a convenient situation to do so.
2. Text messaging may not provide continuous stimuli of all subjective leisure experiences at one time. Unlike Internet surfing and online chatting, the condition for interactivity and continuous stimuli is absent in text messaging.
3. Text messaging is insipid when compared to netbooks, laptaps, or other portable devices with oversized displays. Larger displays generally attract and entice continuous non-utilitarian usage. While stimulating and interactive web-based stores increase pleasure and arousal among recreational online shoppers [7], it is not the case for text messaging.

The implications for the results also suggested that pleasure-oriented text messaging behaviors are associated with perceived freedom, mastery, cognitive involvement and spontaneous engagement. The decision to text, as opposed to voice communication, supports the rudimentary goals of its design by providing personal freedom and control, especially during inconvenient or spontaneous circumstances. Nevertheless, the post-PCA scale (Table 3) captured only 14 percent of the variance in text messaging intention—suggesting that the majority of text messaging activities are purposeful and utilitarian in nature. In other words, the impulsiveness, liberation, mastery and immersion associated with pleasure-oriented text messaging are a trivial part of its widespread acceptance, given these findings. It is, therefore, highly plausible to assume that other external or extrinsic motivational factors might have contributed to a large amount of the unexplained variance. Even so, the fractional parts of subjective leisure components cannot be ignored, especially in the future development of non-utilitarian or consumer-based ICTs. Although we cannot generalize our findings to other consumer-based ICTs, the rudimentary examination of pleasure-oriented text messaging in this study serves as a preliminary effort toward that goal. Researchers who desire to investigate

the adoption of consumer-based ICTs can incorporate some of these SLS sub-scales into their existing frameworks.

There are several limitations to this study. First of all, the study used a convenient sample of undergraduate students in the U.S. These respondents, including many teenagers and young adults, are keen users of mobile text messaging. They are eager consumers of new innovation and have greater tendency to use information communication technologies (ICTs) for playful and entertainment purposes. Future studies that focus on an older generation of mobile users may find disparate results. Second, the study examined only a simple set of text messaging behaviors. As device usability improves, newer Multimedia Messaging (MMS) can offer novel experiences to users. Mobile marketers suggest that at least 27 percent of the U.S. population have MMS capabilities [15], and it is likely that the number will continue to increase along with innovative mobile applications. The components of SLS, therefore, may be appropriate for MMS and other use of ICTs. Third, the elimination of intrinsic motivation warranted further examination. Intrinsic motivation is a three-item construct and dropping at least two of its items necessitated the removal of the entire construct. Future advancement of text messaging applications will bring forth a new complex set of behaviors and motivation, which can be used to append existing SLS scale. Practitioners may find SLS applicable to MMS and future adoption of mobile marketing applications.

7. Conclusion

The widespread acceptance of text messaging as a communication medium allows the study to examine its pleasurable usage. By retrofitting the existing SLS scale to text messaging, perceived freedom, cognitive involvement, mastery and spontaneity capture the essence of pleasure-oriented text messaging. Although there are several limitations to this study, these underlying SLS variables can be a recurring phenomenon among future MMS applications and other consumer-based ICTs behaviors.

8. References

[1] S. Rao and I. Troshani, "A conceptual framework and propositions for the acceptance of mobile services," *Journal of Theoretical and Applied Electronic Commerce Research*, vol. 2, no. 2, pp. 61-73, Aug. 2007.

[2] G. C. Bruner and A. Kumar, "Explaining consumer acceptance of handheld Internet devices," Journal of Business Research, vol. 53, no. 5, pp. 553-558, May 2005.

[3] International Association for the Wireless Telecommunications Industry (CTIA), "U.S. Wireless Quick Facts: Year-End Figures," *CTIA*, Dec. 2009. [Online]. Available: www.ctia.org/media/industry_info/index.cfm/AID/10323 [Accessed: July 31, 2010].

[4] A. Smith, "Mobile Access 2010," Pew Internet & American Life Project, July 7, 2010. [Online]. Available: http://www.pewinternet.org/~/media//Files/Reports/2010/PIP_Mobile_Access_2010.pdf [Accessed: July 30, 2010]

[5] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly*, vol. 13, no. 3, pp. 318-341, Sept. 1989.

[6] L. S. Unger and J. B. Kernan, "On the meaning of leisure: an investigation of some determinants of the subjective experience," *Journal of Consumer Research*, vol. 9, no. 4, pp. 381-392, March 1983.

[7] A. M. Fiore, H. J. Jin, and J. Kim, "For fun and profit: hedonic value from image interactivity and responses toward an online store," *Psychology and Marketing*, vol. 22, no. 8, pp. 669-694, June 2005.

[8] S. Sarker and J. D. Wells, "Understanding mobile handheld device use and adoption," *Communications of the ACM*, vol. 46, no. 12, pp. 35-40, Dec. 2003.

[9] D. Cyr, M. Head, and A. Ivanov, "Design aesthetics leading to m-loyalty in mobile commerce," *Information & Management*, vol. 43, no. 8, pp. 950-963, Dec. 2006.

[10] R. L. Wakefield and D. Whitten, "Mobile computing: a user study on hedonic/utilitarian mobile device usage," *European Journal of Information Systems*, vol. 15, no. 3, pp. 292-300, June 2006.

[11] D. Gefen and D. Straub, "The relative importance of perceived ease of use in IS adoption: a study of e-commerce adoption," vol. 1, article 8, *Journal of the Association for Information Systems*, pp. 1-28, Oct. 2000. Available: http://aisel.aisnet.org/jais/vol1/iss1/8/ [Accessed June 12, 2010].

[12] A. Field, *Discovering Statistics using SPSS for Windows*. Thousand Oaks, CA: SAGE Publications, 2005.

[13] R. A. Kass and H. E. A. Tinsley, "Factor analysis," *Journal of Leisure Research*, vol. 11, pp. 120-138, 1979.

[14] G. Hutcheson and N. Sofroniou, *The Multivariate Social Scientist*. London: SAGE Publications, 1999.

[15] "Mobile statistics," June 2009. [Online]. Available: www.messagebuzz.com/resources/statistics.asp [Accessed: Aug. 1, 2010]

9. Appendix

Modified Subjective Leisure Scale to Text Messaging

Intrinsic Satisfaction

IS1 Text messaging activities have their own rewards

IS2 I enjoyed text messaging activities for their own sake, not for what they will get me

IS3 Pure enjoyment is the only thing in text messaging

Freedom

FR1 Engaging text messaging is completely voluntary

FR3 I do not feel forced participated in text messaging activities

FR2 Others would not have to talk me into performing text messaging activities

FR4 I do not feel obligated to engage in text messaging activities

Involvement

IN1 I could get so involved with text messaging that I would forget everything else

IN2 Text messaging activities help me forget about the day's problems

IN3 Text messaging activities totally absorb me

IN4 Engaging text messaging activities is like "getting away from it all"

IN5 Engaging in text messaging activities is a "spur-of-the-moment" thing

Arousal

AR1 I feel like I'm exploring new worlds during text messaging

AR2 There is novelty in text messaging activities

AR3 Performing text messaging satisfies my sense of curiosity

AR4 Text messaging offers novel experiences

Mastery

MA1 I am confident about my ability to engage in text messaging activities

MA2 I am self-assured about my capabilities to perform text messaging activities

MA3 I have mastered the skills necessary for text messaging activities.

Spontaneity

SP1 I wouldn't know the day before performing text messaging activities

SP2 Engaging in text messaging happens without warning or pre-thought

SP3 Text messaging activities are spontaneous occurrences

SP4 Engaging in text messaging activities happens "out of the blue"