The Influence of Playfulness and Subject Involvement on Focused Attention when Using Social Media

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Abstract: Social media have become hugely popular. It not only has a very large user base, but also supports frequent interactions. However, research has so revealed that users can become addicted to the use of social media and are shielded themselves from the physical world. Why are these users so deeply involved in activities such as, sharing media and interacting with other users? This study applies flow theory to hypothesize that playfulness and subject involvement predict the flow state of focused attention when using Facebook. The results support our predictions. Playfulness had both a direct, significant and positive relationship (β=0.54, $p<0.001$) and an indirect, significant and positive relationship with focused attention through subject involvement (β=0.20, $p<0.001$), with a total combined effect of β=0.64. The reduced R-square for focused attention was 0.42. The implications of these findings are discussed.

Keywords: social media, playfulness, subject involvement, focused attention, flow theory

1. Introduction

Facebook is a hugely popular social media with a tremendous amount of interaction among its users. As of March 2013, there are 1.11 billion monthly active users. On average, 655 million Facebook's users log in any given day to interact with millions of objects, including personal accounts, groups, events and community pages. The average user is connected to 80 community pages, groups and events. On average, more than 300 million photos are uploaded each day (Facebook, 2013). This figure alone suggests that Facebook users spent a good deal of time on the site, have very frequent interactions with other users, and share much media content. Recent media coverage reveals that Facebook users are too involved, to the extent that their daily lives are unconsciously affected. For example, in a recent study Rosen (American Psychological Association, 2011) found that middle school, high school and college students checked Facebook at least once during a 15-minute study period. The study also detected the presence of psychological disorders such as antisocial behaviors, mania and aggressive tendencies in teenagers who have a strong Facebook presence. Using Facebook or video games on a daily basis increased teenagers' absence from school and the likelihood of developing stomach aches, sleeping problems, anxiety and depression. While this heavy use is easily revealed, which is not as clear are the

reasons behind people paying so much attention to social media that they do not notice the passage of time, a practice that caused significant emotional, psychological and cognitive problems.

Review of the literature reveals that there are both extrinsic and intrinsic factors to explain the phenomenon of online gaming and shopping addictions. However, there are fewer studies that explain the phenomenon of social media, such as Facebook. Therefore, we pose the following research questions:

RQ1. What are the factors affecting users to be deeply involved in social media?
RQ2. What are the relationships between these factors?

To address these research questions, the rest of the article proceeds as follows. The next section provides a literature review of the relevant constructs and the hypotheses hence developed. The third section explains the method of this study. The fourth section describes the findings and instrument validation. The fifth section reports the model testing results. The final section discusses the thrusts of this study and future trends.

2. Literature Review

2.1 Flow Theory

Flow theory has been used to explain deep involvement in an activity (Koufaris, 2002). As defined by Csikszentmihalyi (1975a, 1975b), flow refers to "the wholistic sensation present when we act with total involvement". When people are in a state of flow, it is as if "action follows action according to an internal logic which seems to need no conscious intervention on our part. We experience it as a unified flowing from one moment to the next, in which we feel in control of our actions, and in which there is little distinction between self and the environment; between stimulus and response; or between past, present, and future" (1975b, p.43). Flow is the kind of feeling that results from an activity that is interesting, fun and enjoyable.

This description matches the state that many Facebook users are observed to experience. For example, from the data collected in this study, Facebook users spend a lot of time each day logged in to Facebook. They take every opportunity to check Facebook even when there is only a very short time available (often less than ten minutes available each time). Overall, Facebook users log in many times a day and remain logged in for more than an hour in total, resulting in many hours of use each month. Previous studies applied flow theory to explain the use of information technologies (Ghani & Deshpande, 1994; Novak, Hoffman & Yung, 1998; Trevino & Webster, 1992). However, it has been argued that flow theory is too broad and ill-defined (Koufaris, 2002, p.207). It is important to identify more concrete emotional and cognitive components in flow research, such as enjoyment and focused attention to be used as valid metrics in explaining these phenomena (p.208).

2.2 Focused Attention and Subject Involvement

Focused attention is defined as "a centering of attention on a limited stimulus field" (Huang et al., 2011, p.4). Focused attention captures the full concentration of the subject. Hence, it would be a good measure to the flow state, or the deeply involvement of users in social media. Previous studies suggested that vividness, interactivity, and involvement determine the level of focused attention (Hoffman & Novak, 1996) with others suggesting a broad definition of involvement (Greenwald & Leavitt, 1984; Zaichkowsky, 1994). However, as Koufaris suggested (2002), involvement is generally considered "a person's motivational state (i.e., arousal, interest, drive) towards an object where that motivational state is activated by the relevance or importance of the object in question" (p.211). This explains why prior studies found a significant positive correlation between involvement and focused attention (Koufaris, 2002; Novak, Hoffman & Yung, 1998; Huang et al., 2011).

2.3 Playfulness

More recently, Abuhamdeh & Csikszentmihalyi (2009) studied flow in terms of intrinsic and extrinsic motivation and explained the importance of enjoyment in explaining the flow state (p. 1615). Intrinsic motivation is the motivation to engage in an activity purely for the sake of the activity itself (Lepper, Greene & Nisbett, 1973). When individuals are intrinsically motivated, they pursue activities for the interest and enjoyment those activities provide (Csikszentmihalyi, 1975a) and they often perform at relatively high levels (Amabile, 1996; Grolnick & Ryan, 1987). Webster and colleagues found support for the idea that playfulness had a role in predicting microcomputer use in the workplace (Webster & Martocchio, 1992). Hackbarth and Grover (2002) examined how playfulness and anxiety framed the perception of ease of use when using information technology. Other studies included this intrinsic motivational factor as an important determinant for understanding the flow state. For example, Shin and Kim (2008) studied perceived enjoyment and found that it significantly affected attitudes toward the intention to use Cyworld (p.380). Chou and Ting (2003) used playfulness to predict addictive cyber game behavior. They argued that play was an intrinsic value because the resultant happiness has its own value (p.665), and playfulness is of "key value to generate optimal flow" (p.665).

3. Model Framework and Hypotheses Development

Therefore, our proposed hypotheses are as follows:

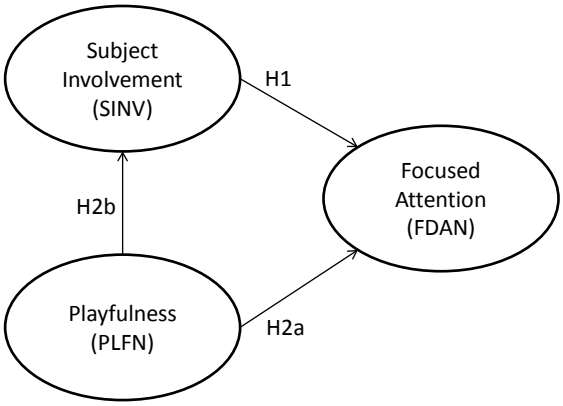


Figure 1. Model Framework of Deep Social Media Use

The model includes three variables. Both subject involvement and playfulness would have a direct, positive and significant relationship with focused attention. Furthermore, playfulness would also have an indirect relationship with focused attention through subject involvement. That is, the more the perceived playfulness, the greater the subject involvement, and finally, the greater the focused attention in using social media.

3.1 Subject Involvement

In this study, subject involvement is defined as an individual's motivational state towards an object while focused attention is defined as a centering of attention on a limited stimulus field. In the use of social media, a lot of the system designs provide tools for social contacts and interactions among peer users. These kinds of activities both involve some passive participation, for example, browsing around friends' pages, status updates, or browsing uploaded photos. On the other hand, there are also some active participation, for example, clicking like button, comment on updates or photos, taking and uploading photos, tagging friends in status or in photos, etc. We think that users are interested in these social interactions, or else, they would not come and even not do anything. Users are involved in social contacts and interactions because of their interest in the process and their inner drive. The more activities the users are involved, the more the time and concentration would be resulted in the social

media for social interactions and social contacts. Finally, users might achieve at a state that they are concentrated on only the activities for social interactions with their peers in the social media. They are not aware of any other things around even though it is at a meeting, during the class, inside the bus or train. Therefore, we hypothesizes that,

Hypothesis 1: An individual user's subject involvement in Facebook would have a direct, positive and significant effect on his/her focused attention during the use of Facebook.

3.2 Playfulness

The majority use of social media is not because of work. That is not the first reason for users being involved in social contacts. Rather, users spend their leisure time to meet people, to make new friends, and to have social contacts and interactions to maintain their friendship. They do not do so for money, or for achieving better performance in work though it may help some time in the future. It is not the main concern. It is important that users are interested in doing so, or else, they would not spend so much time in doing so. The more the user finds social media interesting, the more the user would spend time on social media. They would try one thing or another to have social contact with their peers. They then get feedback or responses. They feel good and would spend more time to meet with more others. The more they are involved in activities, they receive more feedback and responses, and they would spend more time on social media and activities. Sometimes, it is not necessary to do too much. For example, users browse through latest updates of their friends. They are so interested in learning what their friends are doing. They just read. They just like it. Therefore, they read more. They are focused on doing so, without noticing any other things happened. Hence, we think, there would be a direct effect of how a user perceived social media as fun and interesting that triggers the user to be focused to using social media. There would also be an indirect effect of how a user perceived social media as fun and interesting, the user would spend more time to involve in social contacts and interactions, and hence, the user would be more focused on the social media. Hence, we tests,

Hypothesis 2a: An individual user's playfulness on Facebook would have a direct, positive and significant effect on his/her focused attention during the use of Facebook.

Hypothesis 2b: An individual user's playfulness on Facebook would have a direct, positive and significant effect on his/her subject involvement during the use of Facebook.

4. Method

4.1 Background

This study investigated the use of Facebook as a platform to communicate and maintain friendships. Facebook (www.facebook.com) allows users to update their own information at any time and interact with other users as they wish. The platform is open to all who are over the age of 13 and users can learn about each other's activities through status updates and wall posts.

4.2 Subjects

This study targeted an undergraduate program in the Journalism and Communication Department of a university in Hong Kong during the 2011-2012 academic year. These young adults were heavy users of Facebook and this age group was among an important portion of Facebook users. We believed that studying these subjects would not only provide a good idea of how the students used Facebook, but would also shed light on its use among the general population.

4.3 Measurement Items

The questionnaire was designed as an adaptation of previously validated scales. Specifically, five items of subject involvement (SINV1-5), four items of focused attention (FDAN1-4) (Huang et al., 2011), and six items of playfulness (PLFN1-6) Chou & Ting, 2003) were included in the questionnaire. All items were measured on a 7-point Likert-type Scale, ranging from 1 "strongly disagree" to 7 "strongly agree". The major measurement items are listed in the appendix. The subjects were also asked to report their Facebook use, including frequency and duration of use. The degree of current computer use was measured using 7-point Likert-type Scale. The subjects were also asked to state demographic data in the first part of the questionnaire, including sex, age range, Internet knowledge and how many years they had been surfing the Internet.

4.4 Data Collection

The questionnaires were printed and distributed to all of the undergraduate students in the Department of Journalism & Communication at a general assembly. The completed questionnaires were collected before the assembly started. Instructors then helped to distribute the questionnaires in classes to those students who did not attend the assembly. Finally, there were a total of 717 students in the four-year undergraduate program (Year 1: 165; Year 2: 182; Year 3: 192; Year 4: 178) and 219 students completed and returned the questionnaire for a return rate of 30.54%.

4.5 Data Analysis

Firstly, a descriptive analysis of the instrument, including the means and standard deviation, is presented. Next, the internal consistency of the instrument was examined using Cronbach's alpha, composite reliability and the construct validity (discriminant and convergent validity) of the items was assessed by confirmatory factor analysis. The model structure was then evaluated against goodness-of-fit indices, and the predictive and explanatory power was calculated by structural equation modeling using LISREL.

5. Findings

5.1 Descriptive Summary of Respondents

A total of 219 respondents completed and returned the questionnaires. A summary of the descriptive analysis is shown in Table 1. Among them, the gender ratio is comparable to the university's (32:68). The age range was as follows: 18 (8, 3.7%), 19 (25, 11.4%), 20 (34, 15.5%), 21 (51, 23.3%), 22 (62, 28.3%), 23 (29, 13.2%), 24 (7, 3.2%) and 25 (3, 1.4%).

Table 1. Descriptive analysis of respondents

Gender: Male: 64 (29.2%); Female: 155 (70.8%)
Age (18-25): Mean: 21.21; Standard deviation: 1.493
Internet Knowledge 1. Beginners: 9 (4.1%); 2. Fair: 90 (41.1%); 3. Good: 108 (49.3%); 4. Expert: 11 (5%) *(1 not reported)*
Internet Experience 1. 2-3 years: 2 (0.9%); 3. >3 years: 215 (99.1%) *(2 not reported)*
Facebook Usage (No. of times last month): 1. Many times per day: 149 (68.3%); 2. Once per day: 42 (19.3%); 3. Fewer than once per day 27 (12.4%) *(1 not reported)*
Facebook Usage (Total hours last month): 1. More than an hour per day: 82 (37.4%); 2. One hour per day: 66 (30.1%); 3. Less than one hour per day: 71 (32.4%)

Facebook Usage (Time for each login):
1. More than 30 minutes: 70 (32.0%); 2. 20-30 minutes: 37 (16.9%);
3. 10-20 minutes: 73 (33.3%); 4. Less than 10 minutes: 39 (17.8%)

N=219

5.2 Summary of the Observed Variables

The descriptive statistics of the measurement items are summarized in Table 2. The mean scores and standard deviations for Subject Involvement (SINV), Playfulness (PLFN) and Focused Attention (FDAN) range from 4.41 to 4.95 and 1.138 to 1.435; 2.99 to 3.39 and 1.284 to 1.376, 3.39 to 3.73 and 1.226 to 1.349 respectively. All of the constructs satisfied the reliability criteria (alpha>0.70) as suggested in the literature (Nunnally & Bernstein, 1994).

Table 2. Descriptive statistics of items and Cronbach's alpha of constructs

	Mean	**Std. deviation**	**Alpha values**
Subject Involvement (SINV)			
SINV1	4.85	1.377	0.9020
SINV2	4.95	1.138	
SINV3	4.78	1.128	
SINV4	4.41	1.435	
SINV5	4.68	1.274	
Playfulness (PLFN)			
PLFN1	3.06	1.360	0.9480
PLFN2	3.22	1.346	
PLFN3	3.09	1.313	
PLFN4	2.99	1.284	
PLFN5	3.39	1.327	
PLFN6	3.01	1.376	
Focused Attention (FDAN)			
FDAN1	3.73	1.226	0.9230
FDAN2	3.39	1.320	
FDAN3	3.44	1.330	
FDAN4	3.42	1.349	

N=219

Discriminant validity is demonstrated if an item correlates more highly with items within the same factor than it does with items in a different factor (Campbell & Fiske, 1959). The inter-item Pearson correlation coefficients shown in Table 3 depict discriminant validity, where the inter-item coefficients within each measurement constructs are much higher than the correlations across constructs.

Table 3. Inter-item correlations of coefficients of items

	SINV1	**SINV2**	**SINV3**	**SINV4**	**SINV5**	**PLFN1**	**PLFN2**	**PLFN3**	**PLFN4**	**PLFN5**	**PLFN6**	**FDAN1**	**FDAN2**	**FDAN3**	**FDAN4**
SINV1	**1.00**														
SINV2	**0.68**	**1.00**													
SINV3	**0.65**	**0.67**	**1.00**												
SINV4	**0.82**	**0.59**	**0.67**	**1.00**											
SINV5	**0.67**	**0.47**	**0.59**	**0.67**	**1.00**										
PLFN1	0.35	0.32	0.25	0.38	0.27	**1.00**									
PLFN2	0.43	0.37	0.33	0.43	0.35	**0.81**	**1.00**								
PLFN3	0.41	0.33	0.28	0.43	0.32	**0.81**	**0.83**	**1.00**							
PLFN4	0.39	0.32	0.29	0.43	0.34	**0.73**	**0.78**	**0.85**	**1.00**						
PLFN5	0.44	0.35	0.31	0.43	0.34	**0.72**	**0.69**	**0.74**	**0.69**	**1.00**					
PLFN6	0.38	0.24	0.24	0.37	0.29	**0.70**	**0.69**	**0.77**	**0.76**	**0.74**	**1.00**				
FDAN1	0.35	0.30	0.29	0.37	0.28	0.47	0.46	0.49	0.42	0.40	0.37	**1.00**			
FDAN2	0.39	0.35	0.28	0.39	0.30	0.51	0.56	0.55	0.49	0.46	0.46	**0.72**	**1.00**		
FDAN3	0.39	0.35	0.24	0.37	0.31	0.50	0.51	0.54	0.47	0.47	0.46	**0.67**	**0.78**	**1.00**	
FDAN4	0.39	0.37	0.25	0.38	0.34	0.52	0.54	0.57	0.52	0.46	0.48	**0.67**	**0.82**	**0.83**	**1.00**

5.3 Structural Equation Modeling Using LISREL

LISREL software is designed to estimate and test statistical models of linear relationships among latent and manifest variables. It is an extremely powerful structural equation modeling technique that has been used extensively in previous research (Adams, Nelson & Todd, 1992; Taylor & Todd, 1995). LISREL was then used in this study to analyze the survey data and to perform the analysis of the measurement models of the constructs and the structural model testing.

Confirmatory factor analysis was used to test the measurement models for each of the construct. The factor loadings for each item were summarized in Table 4. The goodness of fit indices for these measurement models were listed in the Table 5. They all exhibited higher than suggested threshold values of 0.7 by prior studies (Hair et al., 2010). All the factor loadings were significant at $p<0.01$. Furthermore, average variance extracted (AVE) were assessed. The variance extracted refers to the square of a standardized factor loading that represents how much variation in an item is explained by the latent factor. The average variance extracted was then calculated as the mean variance extracted for the items loading on a construct and is a summary indicator of convergence (Hair et al., 2010). As shown in Table 4, AVEs for SINV, PLFN and FDAN were 0.75, 0.78 and 0.82, all exhibited 0.5 or higher, suggested adequate convergence (Hair et al., 2010, p.709). Moreover, literature also suggested that Cronbach's alpha would over- or underestimate reliability (Raykov, 1997, 1998). Instead, composite reliability would provide a better assessment of internal consistency (Fornell & Larcker, 1981). Calculated by the [square of the sum of standardized loadings], divided by the sum of [square of sum of standardized loadings] and [sum of indicator measurement error] (i.e., 1 minus the square of each loading), resulted composite reliability of each construct was summarized in Table 4. They were all greater than the benchmark for acceptable reliability values of 0.8 (Fornell & Larcker, 1981). Hence, the constructs exhibited internal consistency in the measurement.

Table 4. Confirmatory Factor Analysis

	Factor Loadings		Factor Loadings		Factor Loadings
SINV1	0.92	PLFN1	0.88	FDAN1	0.79
SINV2	0.90	PLFN2	0.89	FDAN2	0.96
SINV3	0.77	PLFN3	0.97	FDAN3	0.96
SINV4	0.91	PLFN4	0.90	FDAN4	0.91
SINV5	0.81	PLFN5	0.83		
		PLFN6	0.83		
AVE	0.75		0.78		0.82
Composite Reliability	0.94		0.96		0.95

Table 5. Summary of goodness-of-fit indices of measurement models testing

	Chi-sq/df	SRMR	RMSEA	GFI	AGFI	NFI	NNFI	IFI	CFI
#	<3	<0.05	<0.1	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9
SINV	0.61	0.0071	0.0	1.00	0.98	1.00	1.00	1.00	1.00
PLFN	1.992	0.0082	0.065	0.99	0.94	0.99	0.99	1.00	1.00
FDAN	2.83	0.0084	0.091	0.99	0.94	1.00	0.99	1.00	1.00

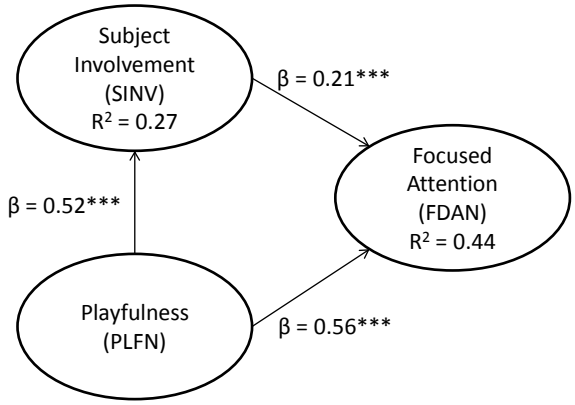
#suggested by Hair et al. (2010)

The measurement models of each construct were found valid. Then, structural equation modeling was used to analyze the structure model. The proposed structural model fitted the data well, with the goodness-of-fit indices all exceeding those suggested in the literature (Hair et al., 2006) (Table 6). Figure 2 showed the resulting path coefficients of the overall model.

Table 6. Summary of goodness-of-fit indices of structural equation modeling testing

	Chi-sq/df	SRMR	RMSEA	GFI	AGFI	NFI	NNFI	IFI	CFI
#	<3	<0.05	<0.1	>0.9	>0.9	>0.9	>0.9	>0.9	>0.9
Model	1.38	0.029	0.039	0.94	0.91	0.97	0.99	0.99	0.99

[#]suggested by Hair et al. (2010)



**p<0.05; **p<0.01; ***p<0.001*

Figure 2. Structural equation modeling testing

The testing results shown that subject involvement had a significant, direct and positive effect on focused attention during Facebook use, with a standard path coefficient of 0.20 ($p<0.001$). Hypothesis 2 was supported. This coefficient suggests that every unit increment in subject involvement would literally strengthen an individual's (positive) focused attention during Facebook use by 0.20 units.

Playfulness had a direct and significant positive effect on focused attention, with a standard coefficient of 0.52 ($p<0.001$). Hypothesis 1a was supported. This coefficient suggests that every unit increment in playfulness would strengthen an individual's (positive) focused attention during Facebook use by 0.54 units. Playfulness also had an indirect effect on focused attention through subject involvement with a standard coefficient of 0.52 ($p<0.001$). Hypothesis 1b was supported. Playfulness, therefore, had a combined total effect of $\beta= 0.64$ (= 0.54 + 0.52 x 0.20) on focused attention.

The R square value shows that playfulness explains 27% of the variance in subject involvement, with subject involvement and playfulness combined explaining 42% of the variance in focused attention during Facebook use. The results are summarized in the Table 7.

Table 7. Summary of the hypotheses testing results

Causal Paths	Path coefficients	Hypotheses
PLFN → FDAN	0.54***	H1a, supported
PLFN → SINV	0.52***	H1b, supported
SINV → FDAN	0.20***	H2, supported
Reduced R^2: *Subjective Involvement (0.27); Focused Attention (0.42)*		

*p<0.001

6. Discussion

The key findings of this study include that:

1. Playfulness has both a direct ($\beta=0.54$, $p<0.001$), and an indirect (mediated by subject involvement) ($\beta=0.64$, $p<0.001$), positive and significant relationship with focused attention; and
2. Subject involvement has a direct, positive and significant relationship with focused attention ($\beta=0.20$, $p<0.001$) and as a mediator between playfulness and focused attention.

Playfulness has a direct, positive and significant relationship with focused attention during Facebook use. This supports our first hypothesis [H1a]. Theoretically, play is regarded as an intrinsic motivation

for users who find interest and fun when using Facebook. Individual users are expected to have a relatively higher level of performance when using Facebook because they find the experience to be fun. This result is supported by previous studies that found playfulness to be key to achieving a flow state (Chou & Ting, 2003). More recently, Abuhamdeh & Csikszentmihalyi (2009) suggested that both intrinsic and extrinsic motivation exerted effects on Internet chess games, although they had different orientations: specifically, intrinsic motivation orientation was found to be associated with a stronger curvilinear relationship between challenge and enjoyment and extrinsic motivation orientation was found to be associated with a heightened affective responsivity to competitive outcome (winning versus losing). The results of this study confirm the value and importance of this intrinsic motivation that affects focused attention (flow state).

Playfulness also has a direct, positive and significant relationship with subject involvement [H1b] that, in turn, shares a direct, positive and significant relationship with focused attention [H2] during the use of Facebook. These support the second and the third hypotheses. Subject involvement refers to the motivational state that is activated by the relevance or importance of the object in question.

Our results suggest that an individual user who finds Facebook interesting and fun will also perceive Facebook as relevant and important and hence might center all his/her attention on using Facebook. This is a logical and reasonable conclusion. In the physical world, people involve in social contacts by phone, face-to-face and meeting. However, most people would have the experience that even though they live nearby, people are too busy to meet once a week or even once a month. Social media provide such a chance for people to meet, to talk, to contact at any time and at any place without much of a hurdle. People want to meet but they maybe too busy, too far away, or cannot make the move to meet. They have this need to meet. They want to do so but they cannot. Therefore, social media become relevant and important as social media help them to accomplish this need. People are interested in their friends. They enjoy spending time to know what are happening in their social circle. Social media also provide the tools for them to be involved. Real-time Chat, comment, status update, photos upload, videos upload, all these activities are provided by social media. The more the involvement, users would find the enjoyment there and hence, more time they would spend. Interestingly, that is why millions of interaction happened every single day. It seems that social media have some ways to understand the hidden needs of people and have rightfully provided the environment and relevant tools to satisfy them.

6.1 Theoretical Implications

Compared our results with a prior study by Huang et al. (2011), we get very consistent findings. In Huang et al. study, subject involvement had a direct and positive relationship with focused attention ($\beta=0.21$, $p<0.001$). In our result, we get comparable strength of the effect ($\beta=0.20$, $p<0.001$), supporting our findings in prior literature.

However, in the study of Huang et al., focused attention was hypothesized to be predicted by another factor, interpersonal interaction, which was either non-significant in web-based interaction environment ($\beta=0.09$, n-s) or weak in text-based interaction environment ($\beta=0.12$, $p<0.001$). The overall R-square for focused attention was only moderate (R-sq = 0.28). In our study, we argued that, based on the flow theory, users would be deeply involved only if he or she was based on intrinsic motivation to find social media interesting or fun. We hypothesized playfulness as the factor predicting focused attention. It turns out that playfulness has both a very strong and significant direct ($\beta=0.54$, $p<0.001$) and indirect effect (through subject involvement) ($\beta=0.64$, $p<0.001$) towards focused attention. The overall R-square has also greatly improved (R-sq = 0.42). This shows that the present study provides a better prediction and richer explanation to focused attention and the phenomenon of the flow state of using social media.

6.2 Limitations and Future Studies

In the study, we did not involve the functionality of any of the objects concerned, such as, interactivity speed (Huang et al., 2011). Future studies could consider that these functionalities might affect the

formation of perceptions of playfulness (i.e., whether the object is interesting or fun). At the moment, our argument is that when the individual user perceives Facebook to be interesting and fun, he/she would find Facebook to be more relevant and important. Moreover, Koufaris (2002) argued that product involvement would predict shopping enjoyment and this type of reverse causal effect may also be a potential consideration in further studies. Furthermore, the nature of social media is to develop and to maintain interpersonal relationship through all those social and interactive tools. The addition of relevant constructs from the interpersonal relationship perspective would fill the research gap in further studies (Ma & Yuen, 2010 & 20111; Ma, Sun & Ma, 2012).

Despite the importance of these findings, this study does have limitations. We targeted undergraduate students in our sample as a good proxy for the general user population because teenagers are active Facebook users. However, further studies of other subject domains are needed to support and generalize the results. In contrast, there are, at present, 800 million Facebook users, determining the sample size is difficult in empirical social research studies (MacCallum et al., 1999), suggesting that what "emerges from a large-sample factor analysis will be more stable than that emerging from a smaller sample" (DeVellis, 2003). Nonetheless, Comrey (1988) states that a sample size of 200 is adequate in most cases of ordinary factor analysis involving no more than 40 items. We use a sampling size of 219 and 16 items in total, falling within the recommended range.

7. Conclusion

This study adapts flow theory with playfulness, subject involvement and focused attention as constructs to explain the deep involvement of Facebook users. We found that playfulness is a key determinant of subject involvement and the focused attention of Facebook users. This provides empirical evidence and a concrete model framework for further studies aimed at understanding the phenomenon.

Appendix

Adapted measurement items and the sources

Items	**Description**
Subject Involvement (SINV) (Huang, et al, 2011)	
SINV1	For me, Facebook is Important.
SINV2	For me, Facebook is Interesting.
SINV3	For me, Facebook is Relevant.
SINV4	For me, Facebook is Means a lot to me.
SINV5	For me, Facebook is Needed.
Playfulness (PLFN) (Chou and Ting, 2003)	
PLFN1	I experience the highest happiness when using Facebook.
PLFN2	I experience the highest excitement when using Facebook.
PLFN3	I experience the highest satisfaction when using Facebook.
PLFN4	I experience the highest hopefulness when using Facebook.
PLFN5	I experience the highest amusement when using Facebook.
PLFN6	I experience the highest enjoyment when using Facebook.
Focused Attention (FDAN) (Huang, et al, 2011)	
FDAN1	When I use Facebook, I am deeply engrossed in what I am doing.
FDAN2	When I use Facebook, I am absorbed in what I am doing.
FDAN3	When I use Facebook, my attention is focused.
FDAN4	I concentrate fully on using Facebook.

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