

Is the use of Social Networking Sites Correlated with Internet Addiction? Facebook Use among Taiwanese College Students

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Abstract—The aim of this study was to investigate the correlation between Facebook involvement and internet addiction. We sampled 577 university students in Taiwan and administered a survey of Facebook usage, Facebook involvement scale (FIS), and internet addiction scale. The FIS comprises three factors (salience, emotional support, and amusement). Results showed that the Facebook involvement scale had good reliability and validity. The correlation between Facebook involvement and internet addiction was measured at .395. This means that a higher degree of Facebook involvement indicates a greater degree of psychological dependency on the internet, and a greater propensity towards social withdrawal and other negative psychological consequences associated with internet addiction. Besides, the correlations between three factors of FIS (salience, emotional support, and amusement) and internet addiction ranged from .313-.372, indicating that these neither of these factors (salience, emotional support, and amusement) is more effective than the others in predicting internet dependency.

Keywords—Social networking sites, Facebook, Facebook Involvement, Internet Addiction

I. INTRODUCTION

SOCIAL networking sites (SNS) combine multiple functions (such as email, blogging, chat, and video sharing) into a single entity, offering users both interactivity and creativity. In the Web2.0 age, SNSs have emerged as a very significant medium of social interaction and communication [1].

The most popular SNS by far is Facebook [2]. According to the survey conducted by checkFacebook.com, with upwards of 730 million users worldwide and more than 11 million users in Taiwan, Facebook has become an essential part of many people's lives. Surveys have shown that 71.2% of internet users in the U.S. are also Facebook users, and that almost 50% of adolescents check Facebook first thing in the morning. Facebook ranked first in a survey of the 100 most popular websites in Taiwan. Nearly 90% of the Facebook population is made up of students, particularly university students. This demographic spends more than half an hour a day on Facebook, and an individual student has an average of 300 Facebook friends [1], [3], [4]. The phenomenon of internet addiction was first explored in 1996 [5]. Although not an officially diagnosable psychological disorder, internet addiction has become a widely explored topic of discussion and research.

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Facebook is an important aspect of internet usage; however, few studies have investigated the relationship between Facebook usage and internet addiction. Research on the psychological consequences of Facebook usage should consider both qualitative and quantitative aspects. For the purposes of this study, qualitative aspects refer to the degree of psychological involvement or intensity, while quantitative elements refer to the length of time spent on Facebook.

Based on this viewpoint, the research objectives of this study were as follows:

- Create a Facebook Involvement Scale (FIS) and test the validity and reliability of this instrument.
- Investigate the correlation between Facebook involvement and internet addiction.

II. METHOD

A. Sample

The sample comprised 577 college students from five universities in Taiwan (263male, 306female, 8 unreported). Participants' average Facebook usage was 2.70 hours per day (with S.D. = 2.10). Averagely, they have 365.16 Facebook friends, (with S.D. = 308.50), join 14.31 Facebook group (with S.D. = 15.97), and use 2.86 Applications (with S.D. = 8.33).

B. Measurements

1. Development of the Facebook Involvement Scale

In this study, Facebook involvement is defined as the degree of psychological dependency on Facebook. Currently, definitive theories on involvement in SNSs have yet to be well-developed. From previous studies on technology addiction, internet dependence, and SNS involvement, researchers have identified the following elements:

Salience

In relation to substance dependence and technology addiction, salience means that a certain behavior has come to dominate a person's life [6]. Surveys have shown that almost 50% of adolescents check Facebook first thing in the morning [2]. Salience can be used as a measure of whether Facebook usage has become habitual behavior on a daily basis. In the Facebook Involvement Scale, participant agreement with the following statements was used to measure salience:

- Facebook is a part of my daily life
- As soon as I get online, I immediately check Facebook
- I use portable electronic devices to remain connected to Facebook
- I check my Facebook news feed before I go to bed at night
- If I do not log on to Facebook for one day, I feel as though I have lost contact with others.
- * Facebook is a very important source of entertainment in my life.

Emotional Supports

One of the main objectives of computer-mediated communication is the provision of emotional support. Studies on the motivation behind Facebook usage have indicated that emotional support is a significant factor. For example, Facebook users may utilize the site to maintain existing relationships, expand their interpersonal network, or seek romantic relationships [1]-[7].

The following items were used to measure emotional support:

- I use Facebook to
- Make new friends
- Stay in touch with old friends
- Re-establish contact with long-lost friends
- Maintain contact with current friends
- Stay updated on school news
- Let everyone know my status
- Share photos or videos
- Share interesting online tidbits
- Facebook friends are an important source of emotional support to me
- When I am happy, I post this news on Facebook
- When I am unhappy, I share my feelings on Facebook
- I use Facebook to remember my friends' birthdays
- I use Facebook to share information about good restaurants or shops
- If I had a Smartphone, I would access Facebook while out.

Amusement

Entertainment or amusement is an important function of SNSs. The gaming applications offered by such sites are also a driving force behind their popularity. In Taiwan, for example, the Facebook game Happy Farm sparked a rapid increase in the number of Facebook users. Studies on motivation behind Facebook usage have also indicated that using Facebook is seen as "cool" and "fun" by adolescents who utilize the site to pass the time and amuse themselves [2], [3], [7]. This scale used the following questions to measure the entertainment value of Facebook:

- I take the personality tests or psychological tests on Facebook for fun
- I download Facebook applications
- I play Facebook games and/or invite others to join Facebook games
- Facebook games are an important source of entertainment in my life
- I sometimes lose track of the time while playing Facebook games

C. Internet addiction scale

We used Young's eight-item Diagnostic Questionnaire (DQ)[5] for measuring internet addiction. The DQ was adapted from DSM-IV criteria for pathological gambling.

We modify the DQ's response format from dichotomous to 4-point Likert scale to improve the psychometric properties. Few psychometric properties of DQ were reported. The analytical results showed that Cronbach α of DQ is .853, indicating good reliability. To test the unidimensionality, we perform a one-factor model CFA which specified all items measured by one latent construct. The CFA model exhibited good fit (chi-square =72.98, df=18 CFI=.98, SRMR=.037, RMSEA=.073), indicating a good construct validity[8]- [9].

III. RESULTS AND DISCUSSION

A. Psychometric properties of the FIS

The Cronbach α of the FIS is .92, indicating good reliability. The confirmatory factor analysis was used to test the construct validity of the FIS. We proposed that FIS is a second-order factor that comprises three second-order factors (i.e. the salience, emotional support, and amusement factors). If the empirical data fit the hypothetical CFA model, the factor validity of the C-PP is established. The procedures of CFA were discussed as follows:

Regarding the model identification, the model df = 319 (>0) and the latent variables are scaled using fixed factor variance = 1.0.

Concerning the data model fit, the CFA model estimation is performed using the default maximum likelihood method of statistical program LISREL 8.80. Regarding the overall model fit The hypothetical model has good overall fit since no offending estimates exist and all estimated parameters are statistically significant ($p < .05$). Furthermore, all factor loadings exceed .30[9].

Regarding various formal statistical fit indices, this study evaluated the data-model fit using four major indices adapted from Kline (2005), as follows: model chi-square, Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR).

The original model showed only acceptable fit (chi-square = 1581.83, df=321 ($p < .001$, CFI=.95, SRMR=.073, RMSEA=.083). We added two set of correlated errors of times (item 8 and 9, item 4 and 6) to revise the model.

The revised model showed good fit (chi-square = 1316.22 , CFI=.96>.90, SRMR=.069<.10, RMSEA=.074<.08). To conclude, the data fit the hypothetical model well. Based on the CFA results, the data thus supported the validity of the FIS. The CFA model with standardized solution is shown in Fig. 1.

B. The correlation between Facebook involvement and internet addiction

The correlation between the Facebook Involvement Scale (FIS) and internet addiction was measured at 0.395, which is categorized as low correlation. This means that according to the research results, Facebook involvement and internet addiction are correlated to a low degree. Further analysis of the correlations between the three sub-scales of FIS and internet addiction showed the following:

The correlations of these three constructs with internet addiction do not differ significantly; only amusement has a slightly stronger correlation with internet addiction.

This means that with regard to the Facebook involvement of university students, neither of these factors (salience, emotional support, and amusement) is more significant than the others in predicting internet dependency.

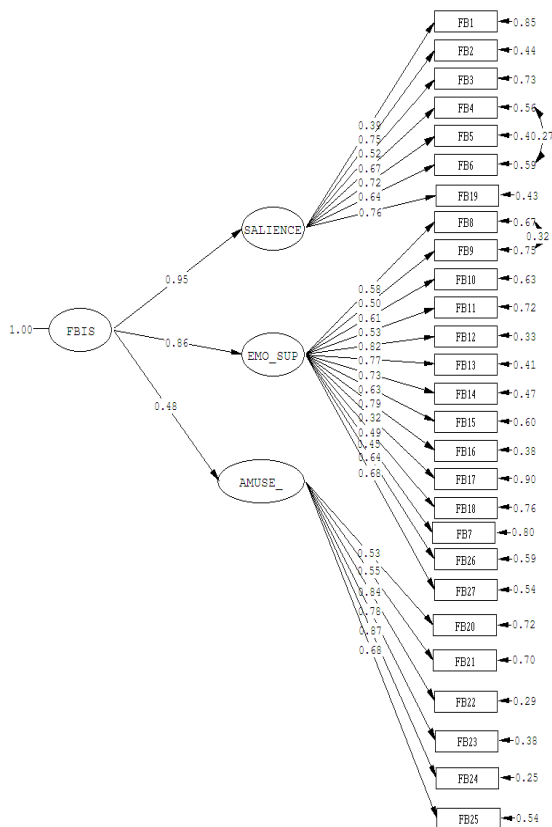
The above results show that Facebook involvement has a low but positive correlation with internet addiction. A higher degree of Facebook involvement indicates a greater degree of psychological dependency on the internet, and a greater propensity towards social withdrawal and other negative psychological consequences associated with high internet use. These results can serve as reference for school guidance counselors.

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Chi-Square=1316.22, df=319, P-value=0.00000, RMSEA=0.074

Fig. 1 CFA on FIS with Standardized Solution

TABLE I
CORRELATION AMONG FIS AND INTERNET ADDICTION

	IA	FIS	SA	ES	AM
Internet Addiction(IA)	1				
FIS	.395	1			
Salience(SA)	.343	.809	1		
Emotional(ES) Support	.313	.915	.658	1	
Amusement(AM)	.372	.835	.503	.631	1