

## **Research Note**

# **Predicting Problematic Internet Use in a Sample of Canadian University Students**

**Henry P.H. Chow**

University of Regina

The growth of Internet users in Canada has been phenomenal. The most recent Canadian Internet Use Survey revealed that 83% of Canadian households had access to the Internet at home in 2012, compared with 79% in 2010 (Statistics Canada, 2013). Doubtlessly, the Internet has become an increasingly important feature of the learning environment for students. Excessive use of the Internet, however, can pose various serious risks for the users. In fact, the negative consequences that can arise from excessive Internet usage have attracted increasing research attention. Studies have demonstrated that academic under-performance, failure to exercise and to engage in face-to-face social activities, negative affective states, sleep deprivation, decreased ability to concentrate, health problems, and family conflicts were the frequently reported consequences of excessive internet use (Gür, Yurt, Bulduk, & Atagöz, 2015; Hetzel-Riggin & Pritchard, 2011; Lam & Lam, 2016; Sari & Aydin, 2014; Snyder, Li, O'Brien, & Howard, 2015; Weinstein & Lejoyeux, 2010). This article presents the findings from a survey that disentangled the determinants of problematic internet use (PIU) in a sample of undergraduate students.

## **Method**

Data for this research were collected as part of a larger investigation into internet use and study habits among university students in Regina (Chow, Hage, & Jurdi, 2012). Using a convenience sample, 348 undergraduate students completed a self-administered questionnaire.<sup>1</sup> The sample consisted of 108 (31.5%) male and 235 (68.5%) female students with a mean age of 21.70 years ( $SD=5.28$ ). Caucasian students ( $n=287$ , 84.4%) and Canadian citizens ( $n=329$ , 95.6%) constituted an overwhelming majority of the sample. A sizable proportion of the respondents were registered with the Faculties of Arts ( $n=184$ , 53.3%), Administration ( $n=41$ , 11.9%), and Social Work ( $n=39$ , 11.3%). Regarding marital status, most were never married or single ( $n=297$ , 86.8%). Over half of the sample had a father ( $n=183$ , 56.2%) or a mother ( $n=207$ , 61.8%) with post-secondary education. As well, over two-thirds of the sample ( $n=214$ , 67.0%) reported an annual family income of more than \$60,000.

## **Data Analysis**

Problematic internet use (PIU) was measured using an eleven-item scale. These items were adapted from previous studies (Anderson, 2001; Morahan-Martin & Schumacher, 2000). Respondents were asked to express their agreement or disagreement with various statements dealing with problems associated with internet use on a five-point scale (1=strongly disagree to

5=strongly agree). The descriptive statistics are presented in Table 1. A summated score using these 11 items was computed and used for regression analysis. This scale was found to be internally consistent, with a Cronbach's alpha reliability coefficient of .847.

To explore the major determinants of PIU among the respondents, a multiple OLS regression model was constructed using 14 predictor variables.<sup>2</sup> The regression model for problematic internet use as shown in Table 2 was found to be statistically significant ( $F(14, 333)=6.968, p<.001$ ) and accounted for 20.1% of the variation. Sex ( $\beta=.123, p<.05$ ), marital status ( $\beta=-.147, p<.01$ ), ethnicity ( $\beta=-.130, p<.05$ ), emotional well-being ( $\beta=.285, p<.001$ ), procrastination ( $\beta=.191, p<.001$ ), self-control ( $\beta=-.132, p<.05$ ), and internet as a mode of communication ( $\beta=.191, p<.005$ ) were found to be significantly associated with engagement in PIU. Specifically, male respondents and those who were single, non-Caucasian, reported academic procrastination, scored lower on emotional well-being scale, demonstrated lower levels of self-control, and considered the Internet as an important mode of communication were more likely to engage in PIU.

Table 1

*Descriptive Statistics for Items Measuring Problematic Internet Use*

	1	2	3	4	5	M
	n	n	n	n	n	(SD)
	(%)	(%)	(%)	(%)	(%)	
a. More than once I have been late for other appointments because I was spending time on the Internet.	160 (46.0)	122 (35.1)	25 (7.2)	37 (10.6)	4 (1.1)	1.86 (1.02)
b. More than once I have missed a meal rather than interrupt my time on the Internet.	179 (51.4)	103 (29.6)	28 (8.0)	30 (8.6)	8 (2.3)	1.81 (1.05)
c. When I am away from home, I usually look for an alternative method (e.g., internet café, blackberry) of getting on the Internet.	110 (31.6)	111 (31.9)	45 (12.9)	60 (17.2)	22 (6.3)	2.35 (1.26)
d. I have avoided making social plans to give myself more time on the Internet.	257 (73.9)	67 (19.3)	11 (3.2)	9 (2.6)	4 (1.1)	1.38 (.77)
e. My grades have declined because I have been spending more time on the Internet.	179 (51.4)	104 (29.9)	40 (11.5)	22 (6.3)	3 (.9)	1.75 (.95)
f. I have gotten into arguments with my family/significant others over being online.	218 (63.4)	75 (21.8)	23 (6.7)	24 (7.0)	4 (1.2)	1.61 (.97)
g. I have been told that I spend too much time online.	198 (56.9)	84 (24.1)	27 (7.8)	33 (9.5)	6 (1.7)	1.75 (1.06)
h. I feel guilty about the amount of time I spend online.	197 (56.8)	85 (24.5)	35 (10.1)	27 (7.8)	3 (.9)	1.71 (.99)
i. I have routinely cut short on my sleep to spend more time online.	154 (44.3)	97 (27.9)	41 (11.8)	43 (12.4)	13 (3.7)	2.03 (1.18)
j. I have tried to hide from my family/significant others the amount of time I am actually online.	255 (73.3)	65 (18.7)	10 (2.9)	15 (4.3)	3 (.9)	1.41 (.81)
k. I have tried to spend less time online but have not been able to do so.	200 (57.5)	85 (24.4)	31 (8.9)	29 (8.3)	3 (.9)	1.71 (1.00)

Note: (1= Strongly disagree; 2 = Disagree; 3 = Uncertain or Not applicable; 4 = Agree; 5 = Strongly agree)

Table 2

*Unstandardized and Standardized Ordinary Least-squares Regression Coefficients for Effects of Socio-demographic & Background Variables on Problematic Internet Use*

	b	$\beta$
1. Sex	1.838	.123 *
2. Age	.087	.066
3. Marital status	-3.020	-.146 **
4. Racial or ethnic background	-2.373	-.130 *
5. Psychological well-being	-.379	-.285 ***
6. Procrastination	1.392	.191 ***
7. Life goal	-.665	-.082
8. Support from friends	-.662	-.088
9. Support from family	-.041	-.006
10. Academic ability	.693	.091
11. Locus of control	-.317	-.042
12. Self-esteem	.147	.020
13. Self-control	-.283	-.132 *
14. Mode of communication	1.392	.191 ***
(Constant)	30.224	
F	6.968 ***	
R <sup>2</sup>	.234	
Adjusted R <sup>2</sup>	.201	
N	348	

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## Discussion

Consistent with previous studies that underlined the significance of psychological variables such as loneliness (Bozoglan, Demirer, & Sahin, 2013; Kim, LaRose, & Peng, 2009) and depression (Chen & Lin, 2016; Fortson, Scotti, Chen, Malone, & Del Ben, 2007; Moreno, Jelenchick, & Breland, 2015) on internet use, the present study has found that lower level of psychological well-being emerged to be the strongest predictor of PIU. As in prior studies (Mohammadi, 2015; Odaci, 2011), the association between academic procrastination and PIU was also revealed. There is a substantial amount of empirical evidence demonstrating low self-control as a major cause of a wide range of impulsive and risk-taking behaviour (Gottfredson & Hirschi, 1990). This analysis ascertains the strong association between lower level of self-control and the outcome variable (Akin, Arslan, Arslan, Uysal, & Sahranç, 2015; Kim, LaRose, & Peng, 2009; Mehroof & Griffiths, 2010; Muusses, Finkenauer, Kerkhof, & Righetti, 2015). As expected, respondents who relied heavily on the Internet as a mode of communication were more likely to engage in PIU (van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008).

Regarding socio-demographic variables, this survey corroborates findings from earlier studies that male respondents were more likely to engage in PIU (Demirer & Bozoglan, 2016; Morahan-Martin & Schumacher, 2000; Poushter, 2016). Marital status also emerged to be a significant predictor. It is conceivable that single students might have fewer family responsibilities and more free time to use the Internet than the non-single counterparts. Finally, the finding that non-Caucasian students were more likely to engage in PIU requires further research attention. In fact, emerging evidence shows notable cultural differences among problematic internet users (Chen & Nath, 2016; Cheng & Li, 2014).

### **Conclusion**

In conclusion, it is vital to identify students who engage in PIU. Results from this preliminary analysis should be of interest to academic advisors, counselors, and educators. The findings may be used to design intervention programs to help students control their excessive internet use. As the current findings are limited by the cross-sectional design of the study and the use of a non-random sample of students, causal interpretations must be made cautiously. A further limitation of the present study concerns the reliance on self-reported measures of PIU. Future studies need to further develop the diagnostic criteria for PIU among university students in light of the changing technology. Other predictor variables such as personality traits should be taken into consideration. It will also be worthwhile to investigate the positive effects of students' use of the Internet and other digital technology.

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## Notes

1 This survey was approved by the university's Ethics Review Board. Although the respondents were recruited from Sociology and Social Studies classes, they were officially registered with the Faculties of Business Administration, Arts, Education, Fine Arts, Kinesiology & Health Studies, Science, Social Work, and Applied Science & Engineering.

2 Fourteen predictor variables were used in the regression model for problematic internet use: Sex (1=male; 0=female), marital status (1=single or never married; 0=other) and ethnicity (1=Caucasian; 0=other) were categorical variables. Age was measured in years (M=21.69, SD=5.28). Support from friends was based on respondents' degree of agreement or disagreement with the statement "The support I receive from friends meet my needs" (M=3.65, SD=.93) on a 5-point scale (1=strongly disagree to 5=strongly agree). Family support was based on respondents' degree of agreement or disagreement with the statement "The support I receive from family members meet my needs" (M=3.91, SD=1.03) on a 5-point scale (1=strongly disagree to 5=strongly agree). Psychological well-being was a summated score (M=18.11, SD=5.09) based on respondents' frequency of feeling sad, lonely, stressed, like crying, depressed, hopeless, and angry in the past 30 days on a 5-point scale (1=never to 5=very frequently). This 7-item scale has a Cronbach's alpha reliability coefficient of .825. Self-control was a composite score (M=8.95, SD=3.23) based on respondents' degree of agreement or disagreement with four statements using a 5-point scale (1=strongly disagree to 5=strongly agree): (1) I lose my temper quite easily; (2) I often behave in a reckless manner; (3) I will try almost anything regardless of the consequences; and (4) I usually say the first things that come into my mind. This 4-item scale has a Cronbach's alpha reliability coefficient of .695. Procrastination (M=3.78, SD=.956) was based on how frequently was procrastination a factor which prevented the respondents from studying using a 5-point scale ranging from 1 (almost never) to 5 (almost always). Life goal (M=4.01, SD=.86) was based on respondents' agreement or disagreement with the statement "I have a set of achievable goals for my future" using a 5-point scale (1=strongly disagree to 5=strongly agree). Academic ability (M=3.76, SD=.91) was based on respondents' degree of agreement or disagreement with the statement "My academic ability is strong" using a 5-point scale (1=strongly disagree to 5=strongly agree). Locus of control (M=3.89, SD=.92) was based on respondents' degree of agreement or disagreement with the statement "Things that happen in my life are largely determined by me" using a 5-point scale (1=strongly disagree to 5=strongly agree). Self-esteem (M=3.53, SD=.97) was based on respondents' degree of agreement or disagreement with the statement "I have high self-esteem" using a 5-point (1=strongly disagree to 5=strongly agree). Mode of communication (M=2.99, SD=1.08) was based on respondents' degree of agreement or disagreement with the statement "The Internet is my preferred method of communication" using a 5-point scale (1=strongly disagree to 5=strongly agree).

*Henry P.H. Chow* is a Professor and Graduate Program Coordinator in the Department of Sociology and Social Studies at the University of Regina. He obtained his doctorate in sociology and equity studies from the Ontario Institute for Studies in Education of the University of Toronto. His areas of interests include the sociology of education, criminal justice, ethnic studies, and survey research methods. He can be reached at the Department of Sociology and Social Studies, University of Regina, 3737 Wascana Parkway, REGINA SK S4S 0A2 Canada; Tel: 306.585.5604; Fax: 306-585-4815; E-mail: Henry.Chow@uregina.ca.