

THE INFLUENCE OF GENDER, SELF-ESTEEM, AND COMPUTER SELF-EFFICACY ON THE INTERNET USAGE PATTERNS OF SELECTED HIGH SCHOOL STUDENTS IN BANGKOK

Rose Koini¹

Natalie Chantagul²

Abstract: The current study attempted to examine the influence of gender, self-esteem, and computer self-efficacy on the Internet usage patterns of high school students in Bangkok, aged between 13 and 19 years who have access to the Internet for social and academic purposes. Reliability analysis was conducted on the self-esteem and computer self-efficacy scales for the purpose of maximizing the internal consistency of these two measures. MANOVA was conducted to test for gender differences in the variables of self-esteem and computer self-efficacy and the three Internet usage patterns of number of hours of computer use at home, hours spent on the Internet at home, and hours of computer use at school. The results indicated that: (1) female participants reported spending more time using the computer at home and at school than their male counterparts, whereas the male participants reported spending more time on the Internet at home than their female counterparts. (2) MANOVA results indicated that there was no overall gender effect for all variables of this study, namely: Internet usage patterns, self-esteem, and computer self-efficacy. (3) To test the impact of the male and female participants' levels of self-esteem and computer self-efficacy on the number of hours of computer use at home, Internet at home, and the hours of computer use at school, multiple regression analysis was conducted for the male and female participants. The results showed that for both the male and female participants, levels of self-esteem and computer self-efficacy were not significantly related to their Internet usage pattern.

Keywords: Gender, Self-esteem, Computer Self-efficacy.

Introduction

The Internet has recently become one of the most important tools in people's lives with rapid developments in the field of information and communication technologies. The Internet is now used extensively in many areas, especially in the field of education (Geçer, 2014). As a support system in education, many educational institutions are increasingly using Internet infrastructure to promote better learning outcomes (Moyle, 2010). Therefore, studying students' attitudes toward the Internet

¹ M.S. Candidate in Counselling Psychology, Graduate School of Human Sciences. Assumption University, Thailand.
rkoinin@yahoo.com

² Ph.D., Lecturer, Graduate School of Human Sciences. Assumption university, Thailand.
Nataliebm@hotmail.com

(cyberspace) and their usage patterns is central to understanding the social, psychological, and economic implications that come with its use, some of which may require the attention of different stakeholders in the education sector. Understanding relationships between socio-demographic factors, personal characteristics, and *Internet usage patterns* can significantly shape both professional practice and theoretical literature. In integrating computers in higher education, researchers have proposed that positive attitudes toward computers and high *computer self-efficacy* could be important factors in helping people learn computer skills and use the Internet (e.g., Busch, 1995, as cited in Sam et al., 2005).

The current study attempted to examine the influence of gender, self-esteem, and computer self-efficacy on the Internet usage patterns of high school students in Bangkok. Participants consisted of 200 senior students recruited through simple random sampling technique from an international high school in Bangkok, aged between 13 and 19 years who have access to the Internet for social and academic purposes. A survey questionnaire incorporating items on demographic characteristics and Internet usage patterns, the Rosenberg Self-Esteem Scale to measure self-esteem, and the Computer Attitude Questionnaire to measure computer self-efficacy was utilized for data gathering and analysis.

Theoretical Framework

The Internet is a form of media technology that has, in recent years, gained increase in use. The rapid increase in the use of online technology and the implied necessity indicate the increasing value users attribute to its use. This suggests that it is used because it meets different needs for different individuals. Therefore, the ‘uses and gratification theory’ can be applied to understand the relationship between gender and Web usage patterns. *Uses and gratification theory* (UGT) is a psychological theory developed by Jay Blumler and Elihu Katz in 1974. The theory basically examines how individuals use mass media. It is based on the assumption that individuals select their media and content in order to fulfill their needs and wants. These needs are expressed as motives behind choosing a particular media. These needs are also about the social and psychological makeup of an individual (Papacharissi, 2008).

Within the same context as the above-cited studies, the current investigation made use of the UGT while focusing on Internet use. Given that the purpose of this study was to examine the relationship between gender, computer self-efficacy, self-esteem, and Internet usage patterns among high school students, the theory was deemed relevant in the sense that it assumes that different circumstances and psychological needs create social facts that shape media use behavior. The current study strived to answer the following questions: Are there significant relationships between gender, self-esteem, computer self-efficacy, and students’ Internet usage patterns? Are there gender differences in self-esteem, computer self-efficacy, and Internet usage patterns? This study also tested the hypothesis that female students are more likely to use the Internet for academic purposes than male students.

Internet Use and Gender Difference in Internet Use for Educational Purposes

This section examines the relationship between gender and Internet use for educational purposes. The relevance of this section to the current study includes the case in point

that (1) this study is about high school students who use the World Wide Web for academic purposes, among other reasons, and (2) Internet usage in light of the uses and gratifications theory reflects the human intent in students to gratify their needs.

A number of studies attempted to examine gender differences in Internet use for educational purposes. For example, McQuillan and O'Neill (2009) pointed out that the increase in Internet access and use at home and at school is increasingly closing the gender gap in Internet use. This is important in understanding the changes in gender dynamics in Internet use, which comes along generational change. While boys have better access to hardware and spend more time using computers outside school for leisure purposes, girls are considerably more likely to use computers for school work than boys (i.e., 50% of girls compared to 15% of boys), according to Valentine et al. (2005). This is mainly true of subject's girls enjoy such as English, history, and science. The only subject in which boys are more likely than girls to use a home computer for school work is Internet, a subject boy tend to enjoy more. This suggests that Internet use is more influenced by attitude towards the subject than attitude towards the Internet itself. On the other hand, girls are significantly more likely than boys to say that they use the Internet for school work (Ofcom, 2008). That girls use the Internet for educational purposes to a greater degree than boys may be widening the gender achievement gap, as research has also shown that high level of leisure use of Internet may be positively associated with a negative impact on educational attainment (Valentine et al., 2005). The same study also reported that for both boys and girls, home use of the Web for educational purposes is demonstrated by its use in the school. As research has shown that girls learn more about the Web at school than boys do, the importance of the school's role in enabling girls to make the best use of the Internet should not be underestimated (Hayward et al., 2003). A study on addictive Internet use among Korean adolescents indicated that female students in girls' schools are more likely to use the Web addictively than those in coeducational schools. This may be partly attributed to contextual influences (Heo, Juhwan, Subramanian, Kim, & Kawach, 2014).

Internet Use, Self-Esteem and Gender

Self-esteem or self-worth originates from life experiences and interpersonal relationships. Failures in life contribute negatively to self-esteem (Rosenberg, 1979, as cited in Pullmann et al., 2009). People want to relate to others and, because of that, they tend to evaluate themselves based on the way they see themselves rejected or accepted by others. Therefore, people's feelings about themselves are rooted in environmental factors such as socialization, culture, and life experience (Pullmann et al., 2009).

There have been several attempts to investigate the relationship between self-esteem and Internet use. For example, Koronczai et al. (2013) studied the mediating effect of self-esteem, depression, and anxiety between satisfaction with body appearance and problematic Web use. It was also found that dissatisfaction with bodily appearance has a positive direct effect on self-esteem but has a negative effect on anxiety, and that neither self-esteem nor anxiety has direct significant effect on problematic Web use. Yao et al. (2014) investigated the influence of personality, parental behaviors, and self-esteem on Internet addiction. The study found that the influence of parental behaviors has a significant relationship with Internet addiction.

Mother's rejection tended to increase the risk of addiction while the father's rejection and overprotection increased the risk of Internet rejection. The study also demonstrated that self-esteem mediated the relationship between children's emotional relationship with parents and Internet use. Parental behaviors with influence on Web usage affected female and male children differently. The study supports empirical justification of the uses and gratification theory in that human beings have psychological and social needs which they seek to gratify when they choose to use the Internet. Shaw and Gant (2002) posited that while males like to use the Internet for seeking information and leisure, women like to use it for communication. However, the study did not find significant gender difference in self-esteem among the users.

Internet Use, Computer Self-Efficacy, and Gender

This section covers related literature on the relationships among gender, computer self-efficacy, and Internet use. This subject matter is important to this study because (1) as indicated earlier, computer self-efficacy refers to a person's judgment of one's capability to use the computer or the World Wide Web (Compeau & Higgins, 1995, as cited in Khorrami-Arani, 2001). If there is a difference in the way males and females view their own capability to use the Web, this implies that gender is a factor in determining Internet usage; and (2) the theoretical underpinnings of the study is the uses and gratifications theory which assumes that individuals select their media and content in order to fulfill their needs and wants. If there is gender difference in computer self-efficacy and Internet use, then that would imply that males and females as distinctive groups exhibit differences in their own self-judgment regarding Internet use. Furthermore, it indicates specific self-efficacy characteristics upon which gender difference is identified.

Hsiao et al. (2012) examined the function of social support and computer self-efficacy in predicting computer use among high school students. The results of the study showed that family support had significant impact on students' computer self-efficacy, but that peer support had higher significant impact than family support. This implies that apart from gender as indicated in previous studies, other factors such as family and peer support also contribute to self-efficacy outcomes in Internet use.

Interrelationships among the Key Variables

As mentioned earlier, the current study's theoretical framework was based on the uses and gratifications theory introduced by Blumler and Katz (1974). The theory assumes that human beings have needs or feelings that drive them to be related to others. In this case, Internet use becomes the medium through which human needs are gratified. However, differences in Internet use tend to be related to different factors.

One of the factors linked to Internet use is gender. There have a number of studies that explored gender differences in Internet use. For example, gender difference in Web usage at home largely depends on where one comes from and varies from one context to another. Schwanen et al. (2014) demonstrated that in households that follow traditional household division of labor, women have limited use of the Internet at home. In cases where both males and females use the technology at home, their views on it differ, according to Ramón-Jerónimo et al. (2013). This is partly because sociocultural norms limit female Internet usage on social networks (Davison & Elena, 2013). The

belief that men have more ability than women in Web usage influences gender difference in its use (Ahmet, 2014). Boys and girls tend to replicate gendered norms in the use of computers and Internet in class (Stoilescu & Egodawatte, 2010). According to Ševčíková and Daneback (2014), adolescent boys and girls use the Internet to gratify sociopsychological desires; that is, sexual arousal and romance, respectively. While using the Internet, boys tend to show risk behavior while girls tend to show responsibility and care (Bauhik & Deshen, 2014). Internet usage is also related to emulative learning of social norms such as drinking (Chiao et al., 2014).

Computer self-efficacy is another factor that had also been linked to both Internet use and gender. For example, it had been demonstrated that students with greater access to the World Wide Web have greater understanding of it and are likely to report higher performance in the use of the technology (Tella et al., 2007). Similar results were reported by Khorrami-Arani (2001) who found that males and females manifest different levels of self-efficacy in Internet use, and that this difference depends on the subject area or purpose for which the technology is routinely used (Tsai & Tsai, 2010). Apart from access, frequency of Internet use also contributes to computer self-efficacy and Internet use (Zhao et al., 2010). Besides access, experience and expertise, family and peer support also contribute to self-efficacy outcomes in Internet use (Hsiao et al., 2012). People's perceptions about the ethical standards of the Internet system have an impact on self-efficacy as well (Finn, 2002). Self-esteem and self-efficacy are also related to the attitude towards the use of social networking sites (Gangadharbatla, 2008).

Based on a thorough review of the literature and the conceptual framework of the study, the research questions are presented as follows: (1) Are there gender differences in the students' self-reported levels of self-esteem, computer self-efficacy, and Internet usage pattern? (2) Are there significant predictive relationships between the students' self-reported levels of self-esteem and computer self-efficacy with their Internet usage pattern, as a function of their gender?

Research Hypotheses

The conceptual framework allows the study to hypothesize the following in an attempt to address the research questions posed.

- H₁: There are gender differences in the students' self-reported levels of self-esteem, computer self-efficacy and Internet usage pattern.
- H₂: The predictive relationships between the students' self-reported levels of self-esteem and computer self-efficacy with their Internet usage pattern will vary as a function of their gender

Method

Sampling and Population

The original plan was to involve all the senior high school students enrolled at the time; however, time and financial constraints made it difficult for this researcher to pursue this line of approach. In consultation with faculty members, it was decided that a sample of 200 students from a population of 250 would suffice to meet the objectives of the study. Of the 200 participants, 97 (48.5%) were males and 103 (51.5%) were females.

Instruments

1. Internet usage patterns: To measure internet usage patterns, students were asked in Section 1. Personal Information (PI) of the survey questionnaire to self-report the amount of time (in hours) they spend on the computer at home, on the Internet at home, and on the computer at school. Amount of time was measured according to the following scale: 1 = 0 hours per week; 2 = 1–4 hours per week; 3 = 5–10 hours per week; and 4 = more than 10 hours per week.

2. Rosenberg Self-Esteem Scale: The Rosenberg Self-Esteem Scale (RSES) is a widely used self-report instrument for evaluating individual self-esteem, developed by Morris Rosenberg in 1965. The RSES had been utilized to measure self-esteem in relation to Internet usage behavior in a number of previous studies including Papacharissi and Rubin (2000), Pullmann et al. (2009), Yao et al. (2014); and Koronczai et al. (2013). The RSES is a 10-item unidimensional scale in which all items are answered using a 4-point Likert scale format ranging from SA = strongly agree, A = agree, D = disagree, to SD = strongly disagree. With regard to the scoring system: SA = 3, A = 2, D = 1, and SD = 0. Items 2, 5, 6, 8, and 9 are reverse-scored; that is, SA = 0, A = 1, D = 2, and SD = 3. Sum the scores for the 10 items. Higher scores indicate higher self-esteem.

3. Computer Attitude Questionnaire: The Computer Attitude Questionnaire (CAQ) developed by Gerald Knezek and other researchers at the Texas Center for Educational Technology in 1997 was used to measure computer self-efficacy. The CAQ is an 8-item scale in which all items are answered using a 4-point Likert scale format ranging from SA = strongly agree, A = agree, D = disagree, to SD = strongly disagree. With regard to the scoring system: SA = 3, A = 2, D = 1, and SD = 0. Items 2, 3, 5, 6, 7, and 8 are reverse-scored, that is, SA = 0, A = 1, D = 2, and SD = 3. Sum the scores for the 8 items. Higher scores indicate higher computer self-efficacy.

Results of the Study

Reliability and Validity of the Results

Reliability analysis was conducted on the self-esteem (RSES) and computer self-efficacy (CAQ) scales. The purpose of the reliability analysis was to maximize the internal consistency of these two measures by identifying those items that are internally consistent (i.e., reliable), and to discard those items that are not.

Table 1: Scale Items Together with Their Corrected Item-Total Correlations and Cronbach's Alphas

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Self-esteem Item-Total Statistics		
• On the whole, I am satisfied with myself. (s1)	.779	.822
• At times, I think I am no good at all. (s2)	.331	.872
• I feel that I have a number of good qualities. (s3)	.289	.877

Table 1: Scale Items Together with Their Corrected Item-Total Correlations and Cronbach's Alphas

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
• I am able to do things as well as most other people. (s4)	.834	.815
• I feel I do not have much to be proud of. (s5)	.304	.876
• I certainly feel useless at times. (s6)	.814	.817
• I feel that I'm a person of worth, at least on an equal plane with others. (s7)	.841	.814
• I wish I could have more respect for myself. (s8)	.725	.828
Cronbach's Alpha = 0.859		
Computer Self-Efficacy Item-Total Statistics		
• I feel comfortable working with a computer. (se1)	.254	.596
• I get a sinking feeling when I think of trying to use a computer. (se2)	.439	.546
• I think that it takes a long time to finish when I use a computer. (se3)	.328	.576
• Computers do not scare me at all. (se4)	.247	.601
• Working with a computer makes me nervous. (se5)	.308	.582
• Using a computer is very frustrating. (se6)	.186	.617
• I will do as little work with computers as possible. (se7)	.391	.558
• Computers are difficult to use. (se8)	.363	.566
Cronbach's Alpha = 0.613		

The criteria employed for retaining items are: (1) any item with 'corrected item-total correlation' (I-T) $\geq .33$ will be retained (.33² represents approximately 10% of the variance of the total scale accounted for), and (2) deletion of an item will not lower the scale's Cronbach's alpha. Table 1 presents the items for the two scales together with their I-T coefficients and Cronbach's alphas.

The reliability analysis indicated that two items from the self-esteem scale (s9 and s10) returned very low corrected item-total correlations and that their deletion would increase the scale's overall Cronbach's alpha. These two items were deleted. Thus, as can be seen from the above Table 1, the factor of self-esteem is represented by 8 items, and the factor of computer self-efficacy is, similarly, represented by 8 items. The computed Cronbach's alpha coefficients for these two scales were .859 and .613, respectively. These two factors of self-esteem and computer self-efficacy were, then, computed by summing across the items that make up that factor and their means calculated.

The following Table 2 presents the means and standard deviations for the number of hours of computer use at home, the number of hours spent on the Internet at home, the number of hours of computer use at school, self-esteem, and computer self-efficacy as a function of gender.

Table 2: Means and Standard Deviations for the Factors of Number of Hours of Computer Use at Home, Number of Hours Spent on the Internet at Home, Number of Hours of Computer Use at School, Self-Esteem, and Computer Self-Efficacy as a Function of Gender

	Male		Female		Mid-point
	Mean	S.D.	Mean	S.D.	
•Hours of computer use at home	2.82	.78	3.03	.75	
•Hours spent on Internet at home	3.11	.79	2.95	.77	
•Hours of computer use at school	2.97	.80	3.13	.75	
•Self-esteem	3.57	.35	3.59	.36	2.5
•Computer self-efficacy	3.66	.24	3.66	.24	2.5

As can be seen from Table 2, the female participants reported spending more time using the computer at home and at school than their male counterparts, whereas the male participants reported spending more time on the Internet at home than their female counterparts. Both male and female participants rated their levels of self-esteem and computer self-efficacy above their respective mid-points. Thus, overall, both male and female participants rated themselves high in both their levels of self-esteem and computer self-efficacy.

GLM Multivariate Analysis of Variance (MANOVA) to Test for Gender Differences
In order to investigate whether there are gender differences in the five variables (number of hours of computer use at home, number of hours spent on the Internet at home, number of hours of computer use at school, self-esteem, and computer self-efficacy), GLM multivariate analysis of variance (MANOVA) was conducted. The results showed that there was no overall gender effect for the five variables combined, $F(5,194) = 1.62, p > .05$. Follow-up tests of between-subjects' effects showed that gender has no significant effect for any of the five dependent variables separately, $p > .05$.

Impact of Self-Esteem and Computer Self-Efficacy on Male and Female Participants' Internet Usage Pattern

In order to test the impact of the male and female participants' levels of self-esteem and computer self-efficacy on the number of hours of computer use at home, the number of hours spent on the Internet at home, and the number of hours of computer use at school (represented by the regression model depicted in Figure 1), multiple regression analysis was conducted for the male and female participants, separately. The analysis involved regressing the dependent variables of number of hours of computer use at home, number of hours spent on the Internet at home, and number of hours of computer use at school on the predictor variables of self-esteem and computer self-efficacy. The results of the analysis are presented in Figure 1: Regression model of the male and female participants.

The results showed that for both the male and female participants, their reported levels of self-esteem and computer self-efficacy were not significantly related to their Internet usage pattern (number of hours of computer use at home, number of hours spent on the Internet at home, and number of hours of computer use at school.) Thus,

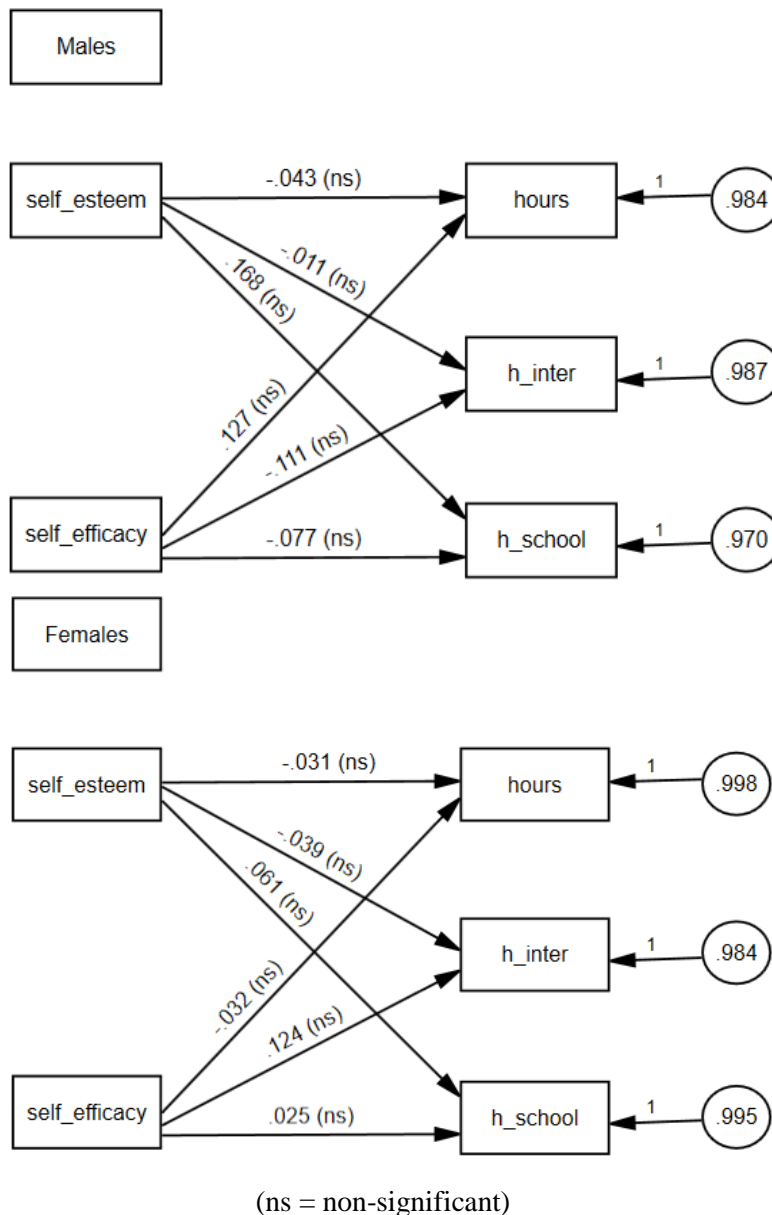


Figure 1: Regression Model of The Male and Female Participants' Internet Usage Pattern as A Function of Their Levels of Self-Esteem and Computer Self-Efficacy

both the male and female participants' levels of self-esteem and computer self-efficacy appeared to have exerted no significant impact on their Internet usage pattern.

Figure 1 also reports the standardized residual for each dependent variable for the regression model. These coefficients provide an estimate of the proportion of variance in each dependent variable not predicted by the model. Alternatively, subtracting these values from 1.00 indicates the proportion of variance predicted by

the model. These coefficients indicated that for the male participants, the regression model accounted for 1.6% of the variance in the number of hours of computer use at home, 1.3% of the variance in the number of hours spent on the Internet at home, and 3% of the variance in the number of hours of computer use at school. For the female participants, the regression model accounted for 0.2% of the variance in the number of hours of computer use at home, 1.6% of the variance in the number of hours spent on the Internet at home, and 0.5% of the variance in the number of hours of computer use at school.

Summary of Findings

The chapter presents the results of analysis of the relationship between gender, self-esteem, computer self-efficacy, and students' Internet usage patterns. The results indicated that: (1) female participants reported spending more time using the computer at home and at school than their male counterparts, whereas the male participants reported spending more time on the Internet at home than their female counterparts; (2) both the male and female participants rated high their levels of self-esteem and computer self-efficacy; (3) gender has no significant effect on Internet usage patterns; and (4) both male and female participants' levels of self-esteem and computer self-efficacy did not indicate a significant impact on their Internet usage patterns.

Discussion

The results indicated that the female participants reported spending more time using the computer at home and at school than their male counterparts, whereas the male participants reported spending more time on the Internet than their female counterparts. The findings did not support the assumption that female students are likely to use the Internet more than male students. MANOVA conducted in this study showed that there was no overall gender effect for all variables of this study, namely: Internet usage patterns (i.e., number of hours of computer use at home, number of hours spent on the Internet at home, number of hours of computer use at school), self-esteem, and computer self-efficacy, $F(5,194) = 1.62, p > .05$. Follow-up tests of between-subjects effects showed that gender has no significant effect for any of the five dependent variables separately, $p > .05$.

The results revealed that for male and female participants, their levels of self-esteem and computer self-efficacy do not have significant impact on their Internet usage patterns. More specifically, it was demonstrated that for both male and female students, their reported levels of self-esteem and computer self-efficacy do not influence the number of hours of their computer use at home, the number of hours they spend on the Internet at home, and the number of hours of their computer use at school. These results are partly in agreement with the results of some earlier studies. For example, Koronczi et al. (2013) found that self-esteem has no direct significant effect on problematic Web use. As a function of gender, Shaw and Gant (2002) did not find significant gender difference in self-esteem among technology users.

Relative to the impact of computer self-efficacy on Internet usage, Tella et al. (2007) reported that self-efficacy with computer use influences the ability to obtain and utilize electronic information for academic purposes. Zhao et al. (2010) observed

that frequent access and the more one uses the technology at home and at school increases computer self-efficacy. Tsai and Tsai (2010) examined computer self-efficacy among junior high school students in Hong Kong in terms of their online explorative self-efficacy and online communication self-efficacy. It was found that no gender difference exists in online explorative self-efficacy. Showing some parallelism with the current study in terms of computer self-efficacy and Internet usage patterns, Zhao et al. (2010) examined the relationship between Internet equality and self-efficacy in computer usage. The results revealed that students who used Internet at home and at school reported higher levels of computer self-efficacy, suggesting that access to the computer contributes to self-efficacy in its use, along with frequency of use.

In light of the principles of the uses and gratifications theory (UGT), people turn to media, including Internet-based social networking to gratify certain needs. UGT assumes that the Internet is a functional tool which people find necessary to use in order to meet their psychosocial needs. There have been studies that explored this theoretical framework in relation to the Internet. For example, Tsai and Tsai (2010) found that there is no gender difference in online explorative self-efficacy. Valentine et al. (2005) found that boys were more intensive users of the Web at home for leisure. On the other hand, girls spend significant amount of time using it for leisure purposes, particularly for online social networking (Ofcom 2008). It could be that lack of significant gender difference in computer self-efficacy and self-esteem is a result of access to the technology, depending on people's background.

The difference in gender, self-esteem, self-efficacy and internet use may be as a result of other factors other than gender. Backer (2009) for instance observes that boys in an Australian context have been socialized to portray stronger self-esteem. As a result, they hardly report lower self-esteem in research. Higher levels of internet use may not be necessarily influenced by, gender, self-esteem and self-efficacy, but by other factors such as attitudes, or information seeking behaviors. Teenage hood is a discovery period. Teenagers during this period seek information, some of which they are afraid to ask. With internet, their levels of internet use can rise not because of changes in their self-esteem or self-efficacy but because of the pressing need for information that they consider a necessity (Bond, et al., 2009).

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