Full paper

Sains Humanika

The Role of Online Privacy Concern as a Mediator between Internet Self-Efficacy and Online Technical Protection Privacy Behavior

Wan Ying Lee*, Chee-Seng Tan, Poh Chua Siah

Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman, 31900 Kampar, Perak, Malaysia

*Corresponding author: lwying@utar.edu.my

Abstract

Online risks may result in unnecessary harm but these risks can be minimized by being online privacy concerned and by taking privacy protective actions. Few studies examined the impact of privacy concern and internet self-efficacy on the online technical protection privacy behavior. Therefore, this research aims to investigate the effect of privacy concern and internet self-efficacy on technical protection. Quantitative and purposive sampling methods were used in this study. Data were gathered via questionnaire surveys from 235 undergraduates from six universities in Malaysia. The questionnaire includes participants' demographic data, internet addiction test, web user self-efficacy scale, privacy concern, and technical protection scale. Hierarchical multiple regression analyses were conducted to examine the effect of internet self-efficacy and privacy concern on technical protection, while controlling for gender, course type, and internet addiction. Results showed that both privacy concern and internet self-efficacy were significant predictors of technical protection. Moreover, mediation analysis showed that there was an indirect effect of internet self-efficacy on technical protection through privacy concern. The results contribute to literature by revealing how internet self-efficacy and privacy concern increase technical protection. The government and policy makers can design intervention and prevention programs that aim to boost privacy concern and internet self-efficacy, so that internet users are more capable of safeguarding their online privacy.

Keywords: Privacy concern; internet self-efficacy; technical protection; privacy behavior

1.0 INTRODUCTION

Malaysia is expected to hit 25 million internet users by 2015 (*25 million internet users*,2013). While the internet brings much convenience and benefits to the internet users' life, internet users need to be aware that they may encounter online risks (Raytheon, 2013). Online risk can be understood as the issues or things that are regarded as a threat and potential source of danger to individuals when using the internet (e.g. online harassment (Debatin, Lovejoy, Horn, & Hughes, 2009), and identity theft (Jensen, Potts, & Jensen, 2005). According to Cyber Security Malaysia, an increase of identity theft incidences have been reported, from 98 cases in 2012 to 398 cases in 2013 (Cyber Security Malaysia, 2013). Information obtained by identity thieves might be exploited or abused by third parties for personal gain (Bonneau, Anderson, & Danezis, 2009), or used in the social context for cyber-bullying or gossiping purposes (Pempek, Yermolayeva, & Calver, 2009). Due to the online risks and its potential harm, it is important for internet users to take security measures to protect their online privacy (Chhikara, Dahiya, Garg, & Rani, 2013).

Research showed that when internet users spend more time online, they are more likely to be bullied (Balakrishnan, 2015) and are exposed to other internet users' unethical behavior such as hacking of passwords, and publishing private information over the internet without permission (Kavuk, Keser, & Teker, 2011). For individuals who are concern about their privacy, it seems better to control their internet use and online exposure, so that their online risks will be reduced. However, by doing so, internet users' opportunity of learning through the internet will be limited (Duerager & Livingstone, 2012). Therefore, protecting one's online privacy by refraining from internet use is not practical. So, how shall one use the internet to reap its benefit while staying safe online? It is to cope and manage the online risk. Interestingly, a study reported that online exposure builds up internet users' resilience and self-efficacy to cope with online risks. This internet self-efficacy then helps to reduce harm from the online risks (Livingstone, Haddon, Gorzig, & Olafsson, 2011).

Internet self-efficacy is an individual's judgment of his or her own ability to apply the internet skills (Eastin & LaRose, 2000). In other words, internet self-efficacy is the perceived confidence or ability of an individual in applying internet skills. A few studies found that higher levels of internet self-efficacy increased privacy concern (Mohamed & Ahmad, 2012) and protective behaviors (LaRose, Rifon, & Enbody, 2008) such as adapting virus protection [16], using strong and multiple passwords for different online accounts and not sharing computers with other people (LaRose et al., 2008; Lee, LaRose & Rifon, 2008; Wirth, Rifon, LaRose, & Lewis, 2007; Rhee, Kim, & Ryu, 2009). It is hypothesized that:

Hypothesis 1: Internet self-efficacy has a significant effect on privacy concern.
Hypothesis 2: Internet self- efficacy has a significant effect on privacy behavior (technical protection).

Other researches (Mohamed & Ahmad, 2012; Sheehan, 2002; Youn, 2009) have indicated that online privacy concern impacts privacy behaviors. For example, concerned internet users refrained from using certain websites that was perceived as a threat (Youn, 2009), provided incomplete data when their personal information was requested Sheehan (2002), used customized privacy settings on Social Network Sites (Rhee et al., 2009). In contrast, unconcerned users demonstrated low privacy protective behaviors. A study by Paine and colleauges investigated the discourse of internet users' privacy conern and the actions taken to protect their concerns through a survey with opened and close questions. Among the responses, there were internet users who reported to not care about online privacy risks (Paine, Reips, Stieger, Joinson, & Buchanan, 2007). In another research, internet users were not worried about the availability of personal information online and majority of them did not take steps to limit that information (Madden, Fox, Smith, & Vitak (2007). Some other internet users reported to be less concerned about their privacy, however when investigated futher, it was because they have taken appropriate protective actions (Paine et al., 2007; Bellman, Johnson, Kobrin, & Lohse, 2004; Rhee et al., 2009). These research shows different relationships among internet self-efficacy, privacy concern and privacy behavior. Hence, it is hypothesized that:

Hypothesis 3: Privacy concern has a significant effect on privacy behavior (technical protection).

In addition, a few research suggested that privacy concern may possibily be a mediator between internet self-efficacy and privacy behavior. Internet users with high self-efficacy are more concern about their information privacy on Social Network Sites and therefore customized their privacy settings (Rhee et al., 2009). Another research reported that internet users with low internet self-efficacy displayed higher online privacy concern and disclosed less when they were aware of the negative consequences of online personal disclosure. The results suggest that self-efficacy may influence privacy behavior through privacy concern. However, study directly aimed at the mediating role of privacy concern is scarce. Therefore, this research would like to confirm the possible mediating effect of privacy concern on the relationship between internet self-efficacy and privacy behavior. Gender, course type, internet user duration and internet addiction were controlled variables as they were likely to influence the relationships (Jen et al., 2005; Paine et al., 2007; Buchanan, Paine, Joinson, & Reips, 2007). It is hypothesized that:

Hypothesis 4: Privacy concern mediates the relationship between internet self-efficacy and privacy behavior (technical protection).

■2.0 METHODOLOGY

Participants and Procedures

Undergraduate students who have used the internet for at least year were invited to participate in the study. Participants took about 20 minutes to complete the questionnaire and were given a token of appreciation. Three hundred questionnaires were distributed to several universities. The universities were selected depending on the availability of the research assistant to collect the data. To control for the confounding effect of ,150 questionnaires were distributed to IT related and non-IT related courses, respectively. There were 235 returned and valid questionnaires (i.e., 79% response rate). Participants' age were between 18 to 30 years old (M = 21.56, SD = 1.44) and 54% were males. Most of them were Chinese (67.4%), followed by Malays (25.1%), Indians (5.0%) and others (2.5%). The number of years participants have been using the internet ranged from 1 to 15 years (M = 7.00, SD = 3.00). Of all participants, 54.2 % were studying IT related courses.

Instruments

The questionnaire consisted of six parts that measure demographic data (6 items), internet addiction (20 items), internet self-efficacy (20 items), privacy concern (16 items), general caution (6 items), and technical protection behavior (6 items).

Demographic data such as age, gender, race, level of education, course of study, and the duration of being an internet user, were collected. Kimberly Young's Internet Addiction Test (IAT) (Young, 1998) was used to measure internet addiction and treated as a control variable in this study. Its 20 items were measured on a 5-point Likert scale, ranging from 1(Rarely) to 5 (Always). The IAT showed a good reliability (α = .88) in the present study.

The 20-item Web User Self-Efficacy (WUSE) Scale (Eachus, Cassidy, & Hogg, 2006) was adapted to measure aspects of internet self-efficacy from the "simplest retrieval of a web page up to the more complex issues associated with the design and construction of the whole web sites" (p. 201). The 20-item WUSE scale was adapted for this study instead of the 40 item scale, as it reduces the burden for participants while it still has good psychometric quality (Eachus et al., 2006). The reliability of the 20-item WUSE scale is acceptable (α =.78).

Buchanan and colleagues' privacy concern and technical protection scale was used to measure participants' response on a 5-point Likert scale (*1 - Never; 2 - Rarely; 3 - Occasionally; 4 - Frequently; 5 - Always*), indicating their level of privacy concern and technical protection of online privacy. The alpha coefficients for the privacy concern and technical protection scale were .92 and .72.

■3.0 RESULTS

Data analyses were conducted using SPSS version 17.0. Table 1 shows descriptive statisitcs and intercorrelation for variables in the present study. Participants' internet addiction, internet user duration, internet self-efficacy, privacy concern, and technical protection are normally distributed as the skewness and kurtosis of each variable was close to 'zero'.

Table 1 Descriptive data and correlation of variables

	N	Min	Max	*M*	*SD*	Skewness		Kurtosis		1	2	3	4	5
						Stat	Std. Error	Stat	Std. Error					
1. Age	235	18	30	21.56	1.44	1.41	0.16	5.7	0.31	-				
2. Internet Addiction	235	23	91	54.94	13.39	-0.1	0.16	-0.45	0.31	-.08	-			
3. Internet User Duration	235	1	15	7.48	2.78	0.27	0.16	-0.21	0.32	.16*	-.21**	-		
4. Internet Self-Efficacy	235	50	99	70.6	9.18	0.32	0.16	-0.12	0.31	.09	-.16*	.23**	-	
5. Privacy Concern	235	20	80	57.7	11.83	-0.14	0.16	-0.03	0.31	.04	.16*	-.10	.24**	-
6. Technical Protection	235	6	30	20.26	4.73	-0.26	0.16	0.06	0.31	.12	.06	-.02	.27**	.46**

*Note. * p < .05; ** p < .01, *** p < .001*

Effect on Privacy Concern

Hierarchical Multiple Regression with enter method was used to investigate the effect of internet self-efficacy on privacy concern (Table 2). Model 1 includes the controlled variables (gender, course type, internet addiction and internet user duration), while internet self-efficacy was added into Model 2. Results showed that Model 2 was statistically significant and explained 14.3% of the variance of online privacy concern, F (5, 229) = 7.64, p < .001. Internet self-efficacy was the strongest predictor (β = .29, p < .001), followed by course type (β = .18, p = .003), internet addiction (β = .16, p = .016) and internet user duration (β = -.16, p = .015). Hypothesis 1 was supported, as internet self-efficacy is a significant predictor of privacy concern and contributed 7.2% to the total variance of privacy concern.

Table 2 Hierarchical multiple regression on privacy concern

	Privacy Concern						
	B	*SE*	*β*	*t*	R^2	Adjusted R^2	R^2 change
Model 1					0.071	0.055	0.071**
(Constant)	52.46	4.20		12.51			
Gender [a]	1.05	1.52	0.04	0.69			
Course Type [b]	4.80	1.53	0.20**	3.13			
Internet Addiction	0.10	0.06	0.11	1.75			
Internet User Duration	-0.46	0.28	-0.11	-1.65			
Model 2					0.143	0.124	0.072**
(Constant)	26.98	7.09		3.81			
Gender [a]	-0.60	1.51	-0.03	-0.40			
Course Type [b]	4.37	1.48	0.18**	2.96			
Internet Addiction	0.14	0.06	0.16*	2.44			
Internet User Duration	-0.67	0.27	-0.16*	-2.44			
Internet Self-efficacy	0.37	0.09	0.29***	4.38			

*Note. * p < .05; ** p < .01, *** p < .001*

SE : Standard Error of Unstandardized Coefficients (*B*)
[a] Female is the reference category
[b] Non-IT related course is the reference category

Effect on Technical Protection

Another Hierarchical multiple regression was conducted to investigate the effect of internet self-efficacy and privacy concern, on technical protection, while controlling for the effects of gender, course type, and internet addiction. The same controlled variables were included in Model 1. Internet self-efficacy was then added into Model 2 and privacy concern in Model 3 as shown in Table 3. The results showed that Model 2 was significant, F (5, 229) = 4.38, p = .001, and explained 8.7% of the total variance. Internet self-efficacy was reported to have significant effect on technical protection (β = .31, p < .001) contributing 8.2% of the total variance. This shows that participants who had higher confidence in using the internet would display higher online technical protection. Results supported Hypothesis 2.

Moreover, Model 3 was also found significant, F (5, 229) = 4.38, p = .001, and explained 25.9% of the total variance of technical protection. Privacy concern alone explained 17.2% of the total variance. Internet self-efficacy (β = .18, p = .005) and privacy concern (β = .45, p < .001) significantly predicted technical protection. Results supported Hypothesis 3.

Table 3 Hierarchical multiple regression for technical protection

	Technical Protection						
	B	*SE*	*β*	*t*	R^2	Adjusted R^2	R^2 change
Model 1					0.005	-0.012	0.005
(Constant)	19.27	1.71		11.28			
Gender [a]	0.41	0.62	0.04	0.66			
Course Type [b]	-0.13	0.62	-0.01	-0.21			
Internet addiction	0.02	0.02	0.05	0.76			
Internet User Duration	-0.01	0.11	-0.01	-0.13			
Model 2					0.087	0.067	0.082***
(Constant)	8.52	2.88		2.96			
Gender [a]	-0.29	0.61	-0.03	-0.47			
Course Type [b]	-0.31	0.60	-0.03	-0.52			
Internet addiction	0.03	0.02	0.10	1.44			
Internet User Duration	-0.10	0.11	-0.06	-0.92			
Internet self-efficacy	0.16	0.03	0.31***	4.54			
Model 3					0.259	0.239	0.172***
(Constant)	3.76	2.68		1.40			
Gender [a]	-0.18	0.56	-0.02	-0.33			
Course Type [b]	-1.08	0.55	-0.12	-1.96			
Internet addiction	0.01	0.02	0.03	0.42			
Internet User Duration	0.02	0.10	0.01	0.16			
Internet self-efficacy	0.09	0.03	0.18**	2.81			
Privacy concern	0.18	0.02	0.45***	7.27			

*Note. * p < .05; ** p < .01, *** p < .001*

[a] Female is the reference category
[b] Non-IT related course is the reference category

Privacy Conern as a Mediator

To test the possible mediating effect of privacy concern on the relationship between internet self-efficacy and technical protection (Hypothesis 4), PROCESS SPSS macro (model 4), with 5,000 bootstrapping was used to test the indirect effect of internet self-efficacy on technical protection through privacy concern (Hayes, 2013). The indirect effect is considered significant when the 95% Bias Corrected Confidence Intervals (CI) do not contain zero [30].

After controlling for gender, internet addiction, course type, and internet user duration, the results showed that there was a direct effect of internet self-efficacy on technical protection (B = 0.09, p = .005). Internet self-efficacy significantly predicted privacy concern (B = 0.37, p < .001) and privacy concern significantly predicted technical protection (B = 0.18, p < .001). More importantly, the indirect effect of internet self-efficacy on technical protection through privacy concern was significant, B = 0.06, 95% CI [0.036, 0.104]. The results indicated that internet self-efficacy enhances technical protection through privacy concern. Hypothesis 4 was supported. The results are displayed in Figure 1.

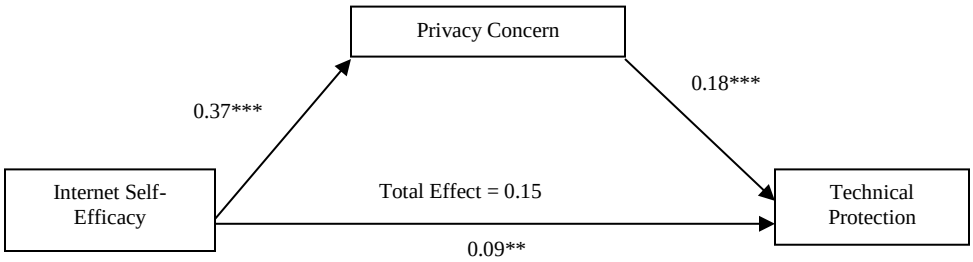

Figure 1 The mediating effect of internet self-efficacy on technical protection

Note. The reported values are unstandardized values (B)
** p < .05; ** p < .01, *** p < .001*

■4.0 DISCUSSION

The finding of this study indicates that individuals with confidence in using the internet would take technical action to protect their online privacy (LaRose et al., 2008; Lee et al., 2008; Rhee et al., 2009; Kurt, 2010). In other words, when internet users are not confident in their ability of using the basics of the internet, they probably would not know how to engage in technical protective actions to safeguard their online privacy. Therefore, it is important to develop the confidence of internet users to increase the likelihood of applying technical protective privacy behaviors. Such technical protection initiated by internet users can reduce the possible harm of online risks.

Results also show that privacy concern mediates the effect of internet self-efficacy on technical protection. Internet users who are more confident in their internet skills tend to have more concern about online privacy. The high concern about online privacy, in turn, increases the application of technical protection to safeguard their online privacy. These findings shed light on the underlying process of the relationship between internet self-efficacy and technical protection. Despite earlier research has examined the relationships among internet self-efficacy, privacy concern, and privacy behavior technical protection (Mohamed & Ahmad, 2012; LaRose et al., 2008), no studies have directly tested the mediating role of privacy concern. Thus, the finding broadens our understanding about the mechanisms among internet self-efficacy, privacy concern, and technical behavior. It is recommended for future research to replicate the findings.

Future studies suggest to take into consideration of other factors that may contribute to privacy concern. For example, perception and level of trust in the online notice (Milne & Culnan, 2004), and the presence and type of a privacy policy (Pan & Zinkhan, 2006). Both of these factors have been found to influence internet users' privacy concern. Taking into account the possible influences of other factors will expand the understanding of developing privacy concern.

Limitation

Although the findings of this study are noteworthy, it is important to take caution when interpreting the results as there are limitations in this study. This study used convenient sampling and therefore the results cannot be generalized. However, participants were recruited from different universities and the diversity of sources, to certain extent, may reflect the intended group (Malaysian undergraduate students). Similarly, it is premature to generalize the findings of this study to other population groups (e.g., primary school students, elderly, and individuals from rural areas) unless the results can be replicated.

This study collected data from participants who are general internet users. Perhaps, future studies could examine the specific types of internet users. There are different types of internet users (Singer, Pruulmann-Vengerfeldt, Norbisrath, & Lewandowski, 2012). Each type of internet users uses the internet for different purposes. For example, practical work oriented internet users focus on information while entertainment oriented internet users seek internet solutions to cater for their interests in entertainment and communication. As there were differences in carrying out search tasks, perhaps, there will also be a difference in online privacy concern and behaviors among the different internet user types. Researchers are suggested to replicate the current study on specific type of internet users.

Finally, this study was a cross-sectional research. It would be beneficial to conduct a longitudinal study to further understand how online privacy behaviors may change over time. Also, it is suggested to design experimental studies to further test the mediating model of the effect of internet self-efficacy on technical protection through privacy concern.

Implication of Study

Results of this study show the importance of internet self-efficacy and privacy concern in explaining online technical protection. Also, results reported a mediating model, showing that privacy concern mediates the effect of internet self-efficacy on technical protection. These results contribute theoretically and practically to society.

This study contributes theoretically as the mediation model sheds light on the process of internet self-efficacy, privacy concern, and technical protection. The mediating process expands the understanding of the relationship between internet self-efficacy and technical protection through privacy concern.

As results showed the impact of internet self-efficacy and privacy concern in understanding technical protection privacy behavior, it is important to focus on developing internet self-efficacy and privacy concern in internet users. One of the educational strategies to implement is to develop self-efficacy in using the internet (LaRose et al., 2008). The Malaysian government and policy makers should emphasize on building up internet self-efficacy and privacy concern among internet users (LaRose et al., 2008) by designing training programs that can

foster this efficacy belief (Rhee et al., 2009). In addition, the Malaysian education institutions could offer compulsory classes about strategies in protecting online privacy for its students. Students need to have knowledge and practice in order to instill the right online privacy attitude and build up the confidence in managing their online privacy. Hence, one suggestion is to conduct privacy safety classes or workshops through the education system, a wider range of students would be able to be reached, equipped, confident and ready to manage online risks effectively.

5.0 CONCLUSION

The present study found that internet self-efficacy and online privacy concern impact internet user's online technical protection privacy behavior. More interestingly, privacy concern mediates the impact of internet self-efficacy on technical protection. These findings suggest the government and policy makers to pay attention to building up individuals' internet self-efficacy and privacy concern. Instilling confidence of using the internet and increase privacy concern will help internet users to be more capable of managing and safeguarding their online privacy, which in turn, minimize the possible harm of online risks.

References

25 million Internet users in Malaysia by 2015. (2013, October 25). Economic Report 2013/2104 in *Malaysia Kini*.

Balakrishnan, V. (2015). Cyberbullying Among Young Adults In Malaysia: The Roles Of Gender, Age And Internet Frequency. *Computers in Human Behavior, 46*, 149-157. doi: 10.1016/j.chb.2015.01.021

Bellman, S., Johnson, E. J., Kobrin, S. J., & Lohse, G. (2004). International Differences in Information Privacy Concerns: A Global Survey of Consumers. *Information Society, 20*(5), 313-324. doi: 10.1080/01972240490507956

Bonneau, J., Anderson, J., & Danezis, G. (2009). P*rying Data Out Of A Social Network*. Paper Presented at the International Conference on Advances in Social Networks Analysis and Mining, Athens, Greece. 2009. Retrieved from http://doi.ieeecomputersociety.org/10.1109/ASONAM.2009.45

Buchanan, T., Paine, C., Joinson, A. N., & Reips, U. D. (2007). Development of Measures Of Online Privacy Concern And Protection For Use On The Internet. *Journal of the American Society for Information Science and Technology, 58*(2), 157-165. doi: 10.1002/asi.20459

Chhikara, J., Dahiya, R., Garg, N., & Rani, M. (2013). Phising and anti-phising techniques: Case study. *International Journal of Advanced Research in Computer Science and Software Engineering, 3*(5), 458-465. Retrieved from http://www.ijarcsse.com/docs/papers/Volume_3/5_May2013/V3I3-0315.pdf

Cyber Security Malaysia. (2013). *Identity fraud: Platform for cybercrime.* Retrieved from http://www.ilkap.gov.my

Debatin, B., Lovejoy, J. P., Horn, A.-K., & Hughes, B. N. (2009). Facebook And Online Privacy: Attitudes, Behaviors, And Unintended Consequences. *Journal of Computer-Mediated Communication, 15*(1), 83-108. doi: 10.1111/j.1083-6101.2009.01494.x

Duerager, A., & Livingstone, S. (2012). *How Can Parents Support Children's Internet Safety?* London: Uk: EU Kids Online.

Eachus, P., Cassidy, S., & Hogg, P. (2006). Further Development of the Web User Self-efficacy Scale (WUSE). *Education in a Changing Enviroment Conference Proceedings*, 1-8. UK: University of Salford. Retrieved from http://usir.salford.ac.uk/1171/2/Further_DEvelopments.pdf

Eastin, M. S., & LaRose, R. (2000). Internet Self-Efficacy and the Psychology of the Digital Divide. *Journal of Computer-Mediated Communication, 6*(1). doi: 10.1111/j.1083-6101.2000.tb00110.x

Field, A. P. (2013). *Discovering Statistics Using IBM SPSS Statistics* (4th ed.). London: Sage Publications.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Appraoch.* NY: The Guildford Press *Interactive Marketing, 18*(3), 15-29. doi: 10.1002/dir.20009

Jensen, C., Potts, C., & Jensen, C. (2005). Privacy Practices Of Internet Users: Self-Reports Versus Observed Behavior. *International Journal of Human-Computer Studies, 63*(1), 203-227. doi: 10.1016/j.ijhcs.2005.04.019

Kavuk, M., Keser, H., & Teker, N. (2011). Reviewing Unethical Behaviors Of Primary Education Students' Internet Usage. *Procedia-Social and Behavioral Sciences, 28*, 1043-1052. doi: 10.1016/j.sbspro.2011.11.190

Kurt, M. (2010). Determination of in Internet Privacy Behaviours Of Students. *Procedia - Social and Behavioral Sciences, 9*(0), 1244-1250. doi: 10.1016/j.sbspro.2010.12.314

LaRose, R., Rifon, N. J., & Enbody, R. (2008). Promoting Personal Responsibility For Internet Safety. *Communications of the ACM, 51*(3), 71-76. doi: 10.1145/1325555.1325569

Lee, D., Larose, R., & Rifon, N. (2008). Keeping our network safe: a model of online protection behaviour. *Behaviour & Information Technology, 27*(5), 445-454. doi: 10.1080/01449290600879344

Livingstone, S., Haddon, L., Gorzig, A., & Olafsson, K. (2011). *EU Kids Online: Final Report.* London: London School of Economics & Political Science. Retrieved from http://www.lse.ac.uk/

Madden, M., Fox, S., Smith, A., & Vitak, J. (2007). *Digital Footprints: Online Identity Management And Search In The Age Of Transparency.* Pew Internet & American Life Project Washington, DC. Retrieved from http://www.pewinternet.org

Milne, G. R., & Culnan, M. J. (2004). Strategies for Reducing Online Privacy Risks: Why Consumers Read (Or Don't Read) Online Privacy Notices. *Journal of Interactive Marketing 18.3 (2004): 15-29.*

Mohamed, N., & Ahmad, I. H. (2012). Information Privacy Concerns, Antecedents And Privacy Measure Use In Social Networking Sites: Evidence from Malaysia. *Computers in Human Behavior, 28*(6), 2366-2375. doi: 10.1016/j.chb.2012.07.008

Paine, C., Reips, U.-D., Stieger, S., Joinson, A., & Buchanan, T. (2007). Internet Users' Perceptions Of 'Privacy Concerns' And 'Privacy Actions'. *International Journal of Human-Computer Studies, 65*(6), 526-536. doi: 10.1016/j.ijhcs.2006.12.001

Pan, Y., & Zinkhan, G. M. (2006). Exploring the Impact Of Online Privacy Disclosures On Consumer Trust. *Journal of Retailing, 82*(4), 331-338. doi: 10.1016/j.jretai.2006.08.006

Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College Students' Social Networking Experiences on Facebook. *Journal of Applied Developmental Psychology, 30*(3), 227-238. doi: 10.1016/j.appdev.2008.12.010

Raytheon. (2013). *Preparing Millennials To Lead In Cyberspace: A Raytheon-Commissioned Study Of Attitudes, Behaviors And Career Aspirations Among Young American Adults Online.* Retrieved from http://www.raytheon.com/

Rhee, H.-S., Kim, C., & Ryu, Y. U. (2009). Self-Efficacy In Information Security: Its Influence On End Users' Information Security Practice Behavior. *Computers & Security, 28*(8), 816-826. doi: http://dx.doi.org/10.1016/j.cose.2009.05.008

Rhee, H.-S., Kim, C., & Ryu, Y. U. (2009). Self-Efficacy In Information Security: Its Influence On End Users' Information Security Practice Behavior. *Computers & Security, 28*(8), 816-826. doi: http://dx.doi.org/10.1016/j.cose.2009.05.008

Sheehan, K. B. (2002). Toward a Typology of Internet Users and Online Privacy Concerns. *Information Society, 18*(1), 21-32. doi: 10.1080/01972240252818207

Singer, G., Pruulmann-Vengerfeldt, P., Norbisrath, U., & Lewandowski, D. (2012). The Relationship Between Internet User Type And User Performance When Carrying Out Simple Vs. Complex Search Tasks. arXiv preprint arXiv:1511.05819

Wirth, C. B., Rifon, N. J., LaRose, R., & Lewis, M. L. (2007). *Promoting Teenage Online Safety With An I-Safety Intervention: Enhancing Self-Efficacy And Protective Behaviors.* Paper presented at the Annual Meeting of the International Communication Association, Montreal, Quebec, Canada.

Youn, S. (2009). Determinants of Online Privacy Concern And Its Influence On Privacy Protection Behaviors Among Young Adolescents. *Journal of Consumer Affairs, 43*(3), 389-418. doi: 10.1111/j.1745-6606.2009.01146.x

Young, K. S. (1998). *Caught in the Net: How To Recognize The Signs Of Internet Addiction And A Winning Strategy For Recovery*. Canada: John Wiley & Sons.