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健康信念對於青年採用網際網路健康資訊諮詢之影響

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摘　要

青年的健康是非常重要的。因此，應用網際網路以促進青年健康的可行性，在近年來有諸多的研究者予以探討。本研究主要探討健康信念模式的二個因素，罹患性認知與嚴重性認知，與網際網路健康資訊諮詢使用的相關性。本研究以青年為研究對象，採問卷調查方法蒐集了一百二十份的有效問卷，以實證本研究所提出的研究模式。大致而言，研究結果顯示：罹患性認知與嚴重性認知均是影響青年使用網際網路健康資訊諮詢的重要因素。

關鍵字：健康行為、青年健康、電子健康、資訊科技、網際網路

Health Beliefs on the Young People's Adoption of Health Information Inquiry through the Internet

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Abstract

Young people's health is important. Therefore, possibilities in the use of the Internet for improving young people's health have been explored by researchers. This study examined whether two subscales of the Health Belief Model, perceived severity and perceived susceptibility, are associated with the usage of health information inquiry through the Internet. The proposed model was empirically investigated by using survey data collected from 120 young people. Overall, the obtained results show that perceived susceptibility and perceived severity were found to be significant predictors of young people's acceptance of health information inquiry.

Keywords: Health behavior, young people health, eHealth, information technology, Internet

1. Introduction

Nearly half of the world's population is under the age of 25 (United Nation Population Fund, 2005). Young people health has its importance. Therefore, many countries are allocating resources to young people health through a variety of sectors, hoping that young people are able to obtain needful health services for their health. In this context, interest in meeting young people health needs and preventing health problems has been manifest in many new projects (World Health Organization, 1999).

Nevertheless, young people are a difficult group to engage in health care and health promotion (Fridrici et al., 2008; Klein and Wilson, 2002; Skinner et al., 2003). Since young people are typically the early adopters of new technologies, the Internet may provide opportunities for engaging them (Borzekowski and Rickert, 2001; Rideout, 2001; Yan, 2010). Therefore, possibilities in the use of the Internet for young people health have been investigated by researchers (e.g., Borzekowski and Rickert, 2001; Bull et al., 2007; Fridrici et al., 2008; Gray et al., 2002; Skinner et al., 2003).

The Internet application, health information inquiry, can be one of the solutions for young people looking for self-care. Health information inquiry is one type of health-oriented and Internet-based information technology. It is provided by health websites, and through which young people can consult health professionals by providing them with questions and limited personal information (e-mail address). The health professionals then give their advice via e-mail to the askers. Nevertheless, the Internet application is not popular among young people so far (Chen, 2009); though the health information inquiry can be tailored to their need. The tremendous advantage from the application for improving young people's healthy well-being is under-exploited.

Understanding why young people accept or reject health information inquiry has become to be one of the challenging issues in information systems research and in eHealth research. However, most past studies have focused on task-oriented technology usage (Hsu and Lu, 2004). Factors affecting health-oriented technology adoption have seldom been addressed. Reviewing prior research, the health belief model (HBM) has provided a conceptual framework for various kinds of personal health behavior. According to the HBM, young people will be more likely to adopt health information inquiry if they perceive that: they are susceptible to an unwanted condition (perceived susceptibility);

the consequences of the unwanted condition are serious (perceived severity); health information inquiry is beneficial to prevention of the consequences (perceived benefits); and barriers to use of health information inquiry are low (perceived barriers). While perceived benefits and perceived barriers are found to be determinants of personal health behavior, the associations between the perceptions, perceived susceptibility and perceived severity, and the personal health behavior would vary from context to context. Therefore, the purpose of the study was to empirically test the aforesaid associations in the context of health information inquiry through the Internet.

2.Conceptual background and research model

The HBM was introduced by Hochbaum et al. in the early 1950s. It was developed to increase the use of then available preventive service (Janz et al., 2002). The characteristics of the model were that if diseases were represented as regions of negative valence. An individual would take action to avoid a disease because (1) he was personally susceptible to it, (2) the occurrence of the disease would have at least moderate severity on some component of his life, (3) taking a particular action would be beneficial, and (4) the chosen action should not entail overcoming barriers such as cost, convenience, pain, embarrassment (Rosenstock, 1974). Since the time that the HBM was introduced, the model has been adopted to explore a variety of long- and short-term health behavior (e.g., Hanson and Benedict, 2002; Iriyama et al., 2006; Norman and Brain, 2005; Von Ah et al., 2004), and it remains one of the most widely recognized conceptual frameworks which provides considerable support in explaining behavior pertinent to prevention and behavior in response to symptoms or to diagnosed disease (Rosenstock et al., 1994; Janz et al., 2002).

Based on the literature reviewed, a research model is depicted in Figure 1 for the study. Intention has been viewed as an effective predictor for actual behavior (Ajzen, 1991; Fishbein and Ajzen, 1975). Therefore, to investigate the intention is sufficient to investigating the behavior. Intention has been widely used by researchers in diverse fields as a surrogate of actual behavior (e.g., Gefen et al., 2003; Klenke, 1992). Researchers also have contended that intention is an acceptable surrogate for behavior when it is not mandatory that certain information technology products are used (Cavaye, 1995).

Therefore, it seems fair to argue that intention to inquire about health information serves as a good proxy for any of its actual deed.

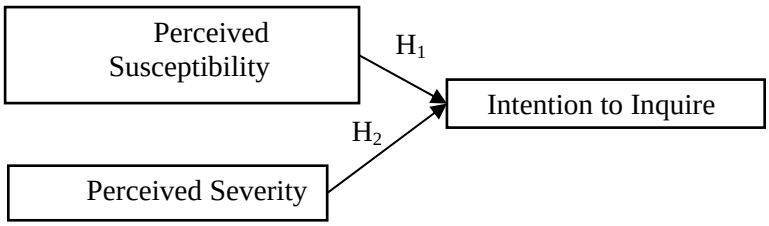


Figure 1. The research model

According to the findings of prior research (e.g., Hanson and Benedict, 2002; Iriyama et al., 2006; Norman and Brain, 2005; Sun et al., 2006), we hypothesized that path predicted by HBM should apply also to the health-inquiry behavior on the Internet. The construct, perceived susceptibility, is defined as "one's belief regarding the chance of getting a condition." The construct, perceived severity, refers to "one's opinion of how serious a condition and its sequelae are" (Janz et al., 2002). Young people will tend to inquire about health information to prevent or control ill-health conditions if they regard themselves as being susceptible to a condition. Also, young people will tend to inquire about health information if they perceive the consequence of contracting a condition is serious. Accordingly, the following hypotheses were proposed:

H_1: Perceived susceptibility will positively affect intention to inquire about health information through the Internet.

H_2: Perceived severity will positively affect intention to inquire about health information through the Internet.

3. Method

3.1 Instrument development

The items for measuring perceived susceptibility and perceived severity were taken from the study of Heaston (2007). The items for measuring intention to inquire were taken from the studies of Gefen et al. (2003) and Hsu and Lu (2004) to capture the

activities that relate to health information inquiry. All the items were modified to accommodate to the context of using health information inquiry through the Internet. Each item was measured on a seven-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (7). Both a pre-test and a pilot test were launched to validate the items of the questionnaire. The pre-test involved two professors in the field of MIS and two experts in the field of healthcare. They were asked to refine the items of the questionnaire for the pertinence of the questionnaire. Thereafter, the questionnaire was pilot-tested that involved 30 college students. Finally, the survey was conducted. The items are listed in Appendix A.

3.2 Data collection

The target population of the study was young people who have Internet access capabilities and have searched for health information through the Internet. Since we did not own data detailing complete population, a random sample selection was not possible in this situation. Convenient sampling from college students was thus employed here. Students who majored in diverse fields of universities in the Tainan county, southern Taiwan were chosen for data collection. Before filling out the questionnaire, students were checked to make sure that they were among the target population. As to the sample size for this study, it is determined by the requirement of structural equation modeling (SEM) which was used as the major statistical analysis technique in the study. The questionnaire was administered to 130 college students, and consequently, the survey yielded 120 usable responses. Of the respondents, 78 (65%) were male, and 42 (35%) were female; 70 (58%) of the respondents were between 16 and 20 in age, and 47 (39%) were between 21 and 25 in age; 99% of the respondents had at least 3-year experience of using the Internet; and about 99% of the respondents used the Internet for at least 2 hours each day.

4. Results

4.1 Analysis of measurement validity

Measurement validity in terms of reliability and construct validity was evaluated. Reliability of the instrument was assessed by using Cronbach’s alpha. All the values were above 0.9 (see Table 1), exceeding the threshold level recommended by Nunnally (1978). This was deemed to provide satisfactory reliability.

Table 1. Descriptive statistics of items and Cronbach's alpha

	Mean	S. D.	Cronbach's alpha
Perceived susceptibility (SUS)			0.94
SUS1	4.83	1.37	
SUS2	4.96	1.33	
SUS3	5.00	1.31	
Perceived severity (SEV)			0.93
SEV1	4.42	1.46	
SEV2	4.54	1.39	
SEV3	4.35	1.50	
SEV4	4.33	1.43	
Intention to inquire (Int)			0.93
Int1	4.57	1.08	
Int2	4.49	1.04	
Int3	4.21	1.29	
Int4	4.22	1.33	

A correlation matrix approach and factor analysis were applied to assess the convergent validity and discriminant validity (Doll and Torkzadeh, 1988). As summarized in Table 2, the smallest within-factor correlations are: Perceived susceptibility (SUS) = 0.78, Perceived severity (SEV) = 0.72, and Intention to inquire (Int) = 0.72. Each smallest within-factor correlation was higher than items designed to measure different constructs. This suggests adequate convergent and discriminant validity of the measurement.

Table 2. Analysis of intermeasurement correlation

	SUS			SEV				Int			
	1	2	3	1	2	3	4	1	2	3	4
SUS1	**1.00**										
SUS2	**0.82**	**1.00**									
SUS3	**0.78**	**0.91**	**1.00**								
SEV1	0.53	0.61	0.62	**1.00**							
SEV2	0.48	0.58	0.60	**0.82**	**1.00**						
SEV3	0.46	0.52	0.52	**0.72**	**0.65**	**1.00**					
SEV4	0.51	0.53	0.53	**0.82**	**0.74**	**0.77**	**1.00**				
Int1	0.45	0.44	0.43	0.41	0.35	0.29	0.38	**1.00**			
Int2	0.41	0.38	0.38	0.44	0.41	0.31	0.45	**0.83**	**1.00**		
Int3	0.39	0.36	0.37	0.45	0.39	0.32	0.38	**0.76**	**0.79**	**1.00**	
Int4	0.38	0.36	0.32	0.29	0.25	0.16	0.21	**0.78**	**0.72**	**0.76**	**1.00**

A principal component factor analysis was performed and the maximum likelihood extraction method was used with a varimax rotation. Consequently, the cross-loading of items on other factors were minimal and there were three constructs extracted. Items were loaded on their hypothesized construct. The obtained results are presented in Table 3.

Table 3. Factor analysis results: principle component extraction

	Factor		
	1	2	3
Perceived susceptibility (SUS)			
SUS1	.25	.26	**.84**
SUS2	.20	.35	**.88**
SUS3	.19	.37	**.86**

Table 3. Factor analysis results: principle component extraction (cont.)

	Factor		
	1	2	3
Perceived severity (SEV)			
SEV1	.23	**.84**	.31
SEV2	.19	**.81**	.30
SEV3	.09	**.84**	.25
SEV4	.19	**.88**	.22
Intention to inquire (Int)			
Int1	**.88**	.16	.24
Int2	**.87**	.27	.13
Int3	**.87**	.25	.12
Int4	**.89**	.00	.20

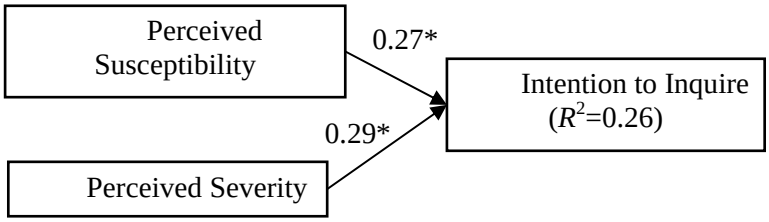
4.2 Model testing results

The hypothesized relationships of the research model were tested by using LISREL8.51. As shown in Table 4, the goodness-of-fit indexes were all within acceptable range, suggesting that the research model fits with the data.

Table 4. Goodness-of-fit measures of the research model

Goodness-of-fit measure	Recommended value	Model statistic
Chi-square/degree of freedom	≦3.00	1.56
Goodness-of-fit index (GFI)	≧0.90	0.91
Adjusted goodness-of-fit index (AGFI)	≧0.80	0.86
Normalized fit index (NFI)	≧0.90	0.95
Nonnormalized fit index (NNFI)	≧0.90	0.97
Comparative fit index (CFI)	≧0.90	0.98
Root mean square residual (RMR)	≦0.10	0.042
Root mean square error of approximation (RMSEA)	≦0.08	0.069

Properties of the paths in the hypothesized model are presented in Figure 2. The explanatory power of the structural model for individual construct was examined by using the obtained R^2. The R^2 for Intention is 0.26. As expected, both perceived susceptibility (t-value=2.36, P<0.1) and perceived severity (t-value=2.36, P<0.1) had a significant positive effect on intention to inquire. Thus, hypotheses H1 and H2 were supported. Together, the proposed model accounted for 26 percent of the variance in intention to inquire about health information through the Internet.



*p<0.1

Figure 2. Model testing results

5. Discussion

Prior studies, which investigated the relationship between perceived susceptibility and preventive health behavior, yielded inconsistent findings (e.g., Shuval, 1970; Tash et al., 1969). In this study, perceived susceptibility was a significant determinant of intention to inquire. This suggests young people who have higher perceived susceptibility are more likely to use the Internet application of health information inquiry. That is, young people would tend to inquire about health information to prevent or control unhealthy condition of the body or mind if they regard themselves as being susceptible to the condition. The results suggest that young people with a higher level of perceived severity have strong intention to inquire as well. It implies that perceived severity promotes health information inquiry. Young people with a high level of perceived severity would estimate the cost of contracting an illness in terms of medical and social consequences. Notably, perceived severity is a subjective perception regarding the consequence of contracting a condition (Rosenstock, 1966), and a non-severe illness could be viewed as a severe one. The degree of seriousness of contracting a condition

depends on personality. This indicates that perceived severity could easily become an issue for young people. Subsequently, they may change their behavioral intentions accordingly. Therefore, perceived susceptibility and perceived severity are important factors that affect the adoption decision of health information inquiry through the Internet. The two factors explained near 30 percent of the variance in intention to inquire (R^2=0.26). Additionally, perceived susceptibility and perceived severity cannot fully explain young people's acceptance of the Internet application, indicating that another factors related to the acceptance of health-oriented technologies must be considered.

6. Conclusions, limitations, and additional research

The purpose of the study was to empirically test the associations between the perceptions, perceived susceptibility and perceived severity, and the personal health behavior, health information inquiry through the Internet. With the study, the effects of perceived susceptibility and perceived severity were confirmed. Both perceived susceptibility and perceived severity were determinants of intention to inquire about health information.

Results of the study should be treated with caution. First, the findings are obtained from a single study with young people as the sample. Caution is recommended when generalizing the findings to other user groups such as adults, elderly, or patients. Second, this study used a survey method to collect data and used SEM to determine relationships between factors. It would not be pertinent to say that there are causalities between factors. Finally, incorporating possible important factors to the HBM would be helpful for gaining a more complete picture of user perceptions in Internet applications.

7. Implications

For academic researchers, this study contributes to a theoretical, primary understanding of the factors that promote health-oriented technology usage such as health information inquiry through the Internet. Health-oriented technology differs from task-oriented technology in terms of reason for use. Individuals use task-oriented technology for the purpose of pursuing personal economical well-being. The feature of ease of use of a system would contribute to overall productivity or job performance (Davis, 1989; Radner and Rothschild, 1975). Hence, the feature of a system may dominate individuals' acceptance of the system.

Nevertheless, health-oriented technology usage is concerned about improving personal healthy well-being. This study demonstrated that an individual's desire to avoid illness or to get well would affect health-oriented technology usage.

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Appendix A

Perceived susceptibility	
SUS1	I worry about becoming unhealthy.
SUS2	My health may get worse.
SUS3	My health will become ill.
Perceived severity	
SEV1	When you become unhealthy, you will probably have to temporarily off your normal activities.
SEV2	When you become unhealthy, you will need to be treated by doctors.
SEV3	When you become unhealthy, you will be unable to carry out your personal or family responsibilities.
SEV4	When you become unhealthy, it will be painful.
Intention to inquire	
INT1	It is worth to inquire about health information from health professional upon the Internet.
INT2	I will frequently inquire about health information from health professional upon the Internet in the future.
INT3	I would leave my e-mail address to inquire about health information from health professional upon the Internet.
INT4	I am very likely to provide the health professional with the information it needs to serve my needs.

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