

Factors Relating to Computer Use for People with Mental Illness

Yan-hua Huang, Ching-yi Wu, Tzyh-chyang Chang,
Yen-ju Lai, and Wen-shuan Lee

Department of Occupational Therapy & Graduate Institute of Clinical Behavioral Science,
College of Medicine, Chang Gung University
259 Wen-Hwa 1st Road, Kwei-Shan Tao-Yuan 333, Taiwan
{Yan-huaHuang, yanhua}@mail.cgu.edu.tw

Abstract. People with mental illness, especially schizophrenia, usually experience obstacles in computer and internet access. The purpose of this study is to investigate factors relating to computer use among Taiwanese adults with mental illness. Individual and semi-structured interviews were used during data collection. Grounded theory data analysis method was used in data analysis. There were one male and six females who live in the community that participated in this research. Results showed that information access, information literacy, information application, family information agency, and personal clinical characteristics were related to computer use. The results of this study may assist computer, education and health professionals in their work with people with mental illness to reduce the digital divide and to experience a better life by expanding their choice of activities through computer and internet access.

Keywords: Computer Access, Digital Divide, Occupational Therapy, Rehabilitation, Schizophrenia, Special Education.

1 Introduction

1.1 Background

Computer technology has developed rapidly and has become an essential part of peoples' daily lives. It is an important tool for learning, social participation, and recreation and has been integrated into everyday activities. Computers can seem very daunting, especially to people who are easily intimidated or confused. They may struggle to understand the concepts and the jargon. People with mental illness, especially schizophrenia, usually experience obstacles in computer and internet access because of their cognitive deficiency. They may encounter difficulties with the computer environment, data entry, information output, and computer learning. These difficulties limit their opportunities to engage in work, learning and leisure activities. If we are able to discover the factors relating to computer use, we are able to expand their choice of activities through computer and internet access.

1.2 Purpose and Significance

The purpose of this study is to investigate factors relating to computer use among Taiwanese adults with mental illness. This study seeks to increase our understanding of the digital divide in an understudied population. It is also the purpose of study to help computer, education and health professionals assist people who have mental illness to reduce their digital divide and to experience a better life.

2 Literature Review

Schizophrenia is a major psychiatric disorder and one that can be long-term disabling. The onset of schizophrenia frequently occurs in early adult life and may pre-empt the development of the daily living and occupational skills of the mature adult, thus making the rehabilitation process difficult [1].

Schizophrenia is a mental disorder characterized by positive symptoms and negative symptoms [2]. Positive symptoms including delusions, hallucinations, and disorganized thinking have generally been assumed to be important determinations of outcome in schizophrenia [2,3]. Negative symptoms include affective flattening, poverty of speech and avolition (inability to initiate and persist in goal directed activities) [2]. Schizophrenia is currently not curable, but through the use of anti-psychotic medication and psychotherapy, the positive symptoms of schizophrenia can usually be controlled. The side-effects of medication include tremor and muscular rigidity [2] which may affect the hand and finger dexterity.

Cognitive deficits associated with schizophrenia commonly consist of impairment in attention, reaction time and memory. Impairment of individuals with schizophrenia had been noted to include: the inability to selectively attend to relevant information while ignoring unnecessary information, the inability to sustain focus over a period of time, and reduced speed in cognitive processing. This results in slowed reaction time and the inability to pay attention to multiple stimuli, which negatively impairs computer use [4].

Based on the positive symptoms, negative symptoms and cognitive deficits, people with mental illness often have problems with computer use and computer learning. Additionally, many professionals find it difficult to advise people who have problems with computer use [5]. Individuals with severe mental illness may benefit from staff that consistently reward small successes and from programs that build positive reinforcements into the program structure [6]. Professionals who know about these factors relating to computer use are therefore extremely important for people with schizophrenia. In response to these needs, we conducted this research to evaluate the factors effecting computer use for people with schizophrenia.

3 Methods

Convenient sampling was used in this study. The participants in this study were seven people with schizophrenia. The location of the interviews was in a day care unit in a

hospital in northern Taiwan. Individual and semi-structured interviews were used during data collection. Data collection was conducted from July to October 2006.

All interviews were audiotaped. Field notes from observations and memos from the researcher's thoughts were also recorded as soon as each interview finished. The length of the interviews ranged approximately 15 minutes to 30 minutes per person. The time depended on the flow of the conversation of that particular interview. Each interviewee was interviewed twice. The total interview time was four hours, producing 137 double spaced pages of transcription in Mandarin Chinese. Grounded theory data analysis method was used in data analysis. The data analysis began with coding the transcripts. The codes for similar concepts were put together as subcategories. Finally, themes related to research questions were identified. Data were analyzed by illustrating subjects' descriptions about computer use in terms of how it relates to their daily living.

4 Results and Discussions

There were one male and six females who live in the community that participated in this research. The age of the participants ranged from 17 to 34 years with a mean age of 25 years. Demographic characteristics for the participants were presented in Table 1. The level of education ranged from junior high school to college. Five of the seven participants are computer literate.

Table 1. Demographic characteristics of participants

<i>Names</i>	<i>Age</i>	<i>Gender</i>	<i>Education</i>	<i>Computer level</i>
Liu	17	Female	Junior high school	Word, Excel
Jiang	19	Female	Senior high school	----
Zheng	23	Female	Vocational senior high school	Word(a little)
Huang	26	Female	Senior high school	Word, Excel, PowerPoint, Outlook, FrontPage /with certificates
You	29	Male	Senior high school (did not graduate)	Delete and copy files
Hu	30	Female	College	Word, Excel, PowerPoint
Wu	34	Female	Senior high school (did not graduate)	----

Results showed that information access, information literacy, information application, family information agency, and personal clinical characteristics all affect the quality and quantity of computer use in the daily lives of the participants.

4.1 Information Access

None of the participants in this study have a personal computer of their own. Also, they do not have computer access in the day care center because the computer room is now occupied by a workshop. The households of most of the participants contain a computer that they can share with family members. One participant's family members do not allow him to have internet access in order to restrict him from surfing on the internet or talking to friends on the internet. So within a household, the level of computer use and internet access of a person's family members can affect his own level of computer use and internet access.

4.2 Information Literacy

Participants who currently use computers already knew how to use computers before they developed mental illness. Some of these participants still have an interest to continue developing their computer skills. One participant has gone to community college for continuing education and has earned a few computer skill certifications. Some participants continually improve their computer literacy on their own by either reading computer related books or surfing on the internet for information. One participant mentioned that English websites or websites with English words were difficult for her to read, even though most websites in the world contains at least some English words or terms. One participant mentioned that she had difficulty in typing Chinese words by using phonetic symbols. A few mentioned that they were afraid of computer viruses because they do not have the computer problem solving skills necessary to handle viruses.

4.3 Information Application

Most of the participants use computers to search for information on the internet related to job, leisure, and health issues. Some mentioned that they search on the internet for medical information, such as checking the side-effect of the medicine they were taking from the on-line pharmacy or comparing different day care centers through their websites. The design of websites does matter to them. One participant mentioned that the day care center she attended had an easy to read website design and contained information that was useful to her.

4.4 Family Information Agency

Family members can help people with mental illness get the information they want when they are not able to acquire the information by themselves. Even though people with mental illness are not good at using computers, they are able to enjoy the convenience of digital technology by family members' assistance. However, family member can be one of the factors that limited the opportunity for computer use and further engaging in computer related activities in people with mental illness.

4.5 Personal Clinical Characteristics

People who have schizophrenia may have personal clinical characteristics which including negative symptoms of illness, side effects of medicine, and impaired cognitive ability. Negative symptoms such as avolition may affect leaning and developing computer skills. Some participants give up easily when confronted with difficulties. Side effects of medicines such as tremor negatively affect the hand and finger dexterity in manipulation of the computer mouse and in keyboard typing. Double clicking of the mouse is difficult for a few participants. Some participants experience difficulty with website surfing or e-mailing because they cannot understand computer file structures due to their lack of abstract thinking ability, memory, and attention span.

In conclusion, findings suggest that it is not only important for people with mental illness to have access to computers, but it is also important to increase their computer information literacy and computer information application in daily living. Family members or caregivers can provide or limit the opportunity of computer use in people with mental illness. Because people with schizophrenia may have negative symptoms and impaired cognitive ability, user friendly computer and website designs are very important. They will benefit from websites designed with a user-friendly interface, particularly in websites related to mental illness, such as hospital affiliated day care center, on-line pharmacy, job search, and on-line support websites.

5 Limitations

The limited number of sessions and length of time of the interview could be considered as limitation of this study. People with mental illness may have poor ability to express their ideas due to their positive and negative symptoms.

Only participants in one day care center in Northern Taiwan were recruited in this study. The level of urbanization and the difference between town and country may influence the results of this study. Although all the participants live in the counties outside of the Taipei city in northern Taiwan, people who live in northern Taiwan may have more experience in computer and internet use compared to other regions in Taiwan. The experiences of these participants may not represent all people with mental illness in Taiwan.

6 Application

The results of this study may assist health professionals, such as occupational therapists, in their work with people with mental illness and further to help them to use computers in their daily lives. First, people with mental illness who have limited problem solving ability and short attention span should be provided a stable, fast and virus free computer. Second, a computer rehabilitation program that is focused on enhancing computer literacy, information application, and personal motivation will promote computer use in this population. The computer rehabilitation program should be designed according to the subject's cognitive level. The computer rehabilitation program can also redesign the computer or mouse, such as changing the mouse double click to a single click or prolonging the time of double clicks in order to compensate for

the tremor of hand movement. The professional should pay attention to the subject's needs for daily computer use and provide suitable problem solving strategies regularly. Third, a website that is created specifically for use by people with mental illness is important to increase their motivation and efficacy in using computers and the internet. The website design should contain an easy interface with clear icons and not too many main points in one webpage. Important areas of content should be accessible within 1 or 2 clicks of the mouse. The website design should make it easy to navigate from webpage to webpage. Our findings may provide website designers with ideas about how to design a user friendly website that people with mental illness will be motivated to visit and browse.

Acknowledgement. This study was supported by National Science Council grant 95-2520-S-182-002. We are grateful to the participants in this study for their participation and sharing their experience of computer use to us.

References

1. Durham, T.: Work-related activity for people with long-term schizophrenia: a review of the literature. *British Journal of Occupational Therapy* 60(6), 248–252 (1997)
2. American Psychiatric Association.: DSM-IV-TR, diagnostic and statistical manual of mental disorders. 4th edn. American Psychiatric Association Washington, DC (2000)
3. McGurk, S.R., Meltzer, H.Y.: The role of cognition vocational functioning in schizophrenia. *Schizophrenia Research* 45, 175–184 (2000)
4. Gold, J.M., Harvey, P.D.: Cognitive deficits in schizophrenia. *Psychiatric Clinics of North America* 16, 295–312 (1993)
5. Turpin, G., Armstrong, J., Frost, P., Fine, B., Ward, C.D., Pinnington, L.L.: Evaluation of alternative computer input devices used by people with disabilities. *Journal of Medical Engineering & Technology* 29(3), 119–129 (2005)
6. Blankertz, L., Robinson, S.: Adding a vocational focus to mental health rehabilitation. *Psychiatric services* 47, 1216–1222 (1996)