Exploring the Self-Learning Experiences of Patients With Depression Participating in a Multimedia Education Program

Mei-Hsien Chou • Mei-Feng Lin* • Mei-Chi Hsu**
Yao-Hua Wang* • Huei-Fan Hu***

ABSTRACT: The purpose of the present study was to explore the self-learning experiences of depression patients on interactive multimedia education program. Qualitative in-depth interviews were employed. Fourteen patients with a first episode of major depression were recruited from a psychiatric outpatient department. Explanations of the purposes of the exercise and on-the-spot teaching were provided by the researcher before the study began. A tape-recorded, semi-structured interview format was employed after two weeks. Data analysis was performed in the framework of line-by-line content, contextual and thematic analysis. Eight subjects successfully completed the entire learning activities. Content analysis revealed 4 main aspects of successful self-learning experiences: the triggering of learning motivation, the enjoyment of self-paced learning, support for the effects of learning materials, and the gaining of self-awareness and changes. The factors influencing learning performance were related to: environmental impact, the degree of familiarity with traditional learning, possession or non-possession of the necessary computer operation skills, and good computer support. However, the findings provide a preliminary understanding of the application of interactive multimedia education programs in terms of self-learning outcomes and recognizing key elements of learning impediments among the study sample. A larger sample size with different clinical contexts is recommended to determine the effect and generalizability for future research. Furthermore, the creation of a computerized learning environment with different educational styles is crucial to patients' success in obtaining depression-related information and understanding effective adaptive skills.

Key Words: depression, self-learning experience, multimedia education program.

Introduction

Depression is expected to become the second leading cause of disability globally by the year 2020 (Whooley et al, 2002). Depression may impair some people's ability to function over a period of time. Furthermore, depression not only has a negative impact on quality of life, but is also associated with social and vocational dysfunction. It can cause a range of problems, such as family conflict and disruption, suicide, and increases in medical expenses and social costs. People with depression suffer a high rate of relapse (approximately 40% among adult patients), while 20% of patients can develop chronic depression and face difficulties in maintaining sufficient social functioning (Fang, Chen, & Chen, 1998). Shortages of manpower (due to financial management reforms) and time, as well as heavy workloads have become the greatest barriers to adequate patient health education. As a result, depression is mainly treated by antidepressants in outpatient departments (OPD) (Christopher, 2000). However, specially designed psychoeducation programs emphasizing prevention and early intervention, relapse avoidance, symptom control, and self-function reinforcement can often provide satisfying techniques to overcome depression and reduce the

RN, MSN, Teaching Assistant, School of Nursing, Fooyin University; *RN, PhD, Assistant Professor, School of Nursing, National Cheng Kung University; **RN, MSN, Doctoral Candidate, Faculty of Nursing and Health, Griffith University, Australia; ***MD, MS, Department of Psychiatry, Sin-Lau Christine Hospital.

Received: June 11, 2004 **Revised:** October 29, 2004 **Accepted:** November 8, 2004

Address correspondence to: Mei-Feng Lin, No. 1, Ta-Hsueh Rd., Tainan 70101, Taiwan, ROC.
Tel: 886(6)235-3535 ext. 5035; E-mail: L30mf@mail.ncku.edu.tw

spread of the condition (Lin, Simon, Katzelnick, & Pearson, 2001; Mynors-Wallis, Gath, Day, & Baker, 2000).

Psychoeducation is effective in primary disease prevention and health promotion (Wells et al., 2000). Health professionals in psychiatric settings are take responsible for the promotion of psychoeducation. Curriculum content, teaching strategies and materials have to meet the needs of the target population in order for successful learning outcomes to be achieved (Thompson et al., 2000). Wright, Wright, Salmon, & Beck (2002) indicated that comuter-assisted learning (CAL) was effective and used successfully among patients with depression, anxiety, and Obsessive Compulsive Disorder.Under computer-assisted learning, most participants found improvements in their ability to create insights and promote self-awareness in depression and anxiety, and experienced a positive influence throughout treatment.

Health education has been delivered to patients mainly through booklets, information sheets, slides, and tapes in the past. The rapid development of computer technology in recent years has had a direct impact on the development of learning and education. Data storage has also advanced from films, slides, tapes, videotapes, floppy discs and memory chips, to compact discs (CDs) (Chen, 2003). Comuter-assisted learning (CAL) refers to the use of computers for educational purposes by multimedia information systems, with which a learner is able to freely choose a learning style preference, with many options available in a nonlinear instruction order, in accordance with personal needs and differences (Tsai et al., 1999). Generally speaking, the multimedia education system that combines different content formats, such as text, pictures, graphics, audio, video, and animation allows the knowledge-building process transformed to be from a one-way process to a two-way process involving synchronous communication and interaction. Thus, it encourages more active engagement and less passive participation, and reinforces the effectiveness of learning (Chang & Liu, 2001; Wright et al., 2002). Greenhalgh (2001) also stated that this learning mode is characterized by accommodating the needs, interests, current knowledge, and learning styles of the learners, and as a vehicle for providing concrete experiences in order to enhance learning, flexible learning, and two-way communication between learner and teaching materials. At present, CAL has been widely implemented in many different fields. The existing studies also show that CAL is more effective than traditional methods in promoting learning achievements (Burda, Starkey, Dominguez, & Tremont, 1995; Wright et al., 2002). For instance, Radjenovic and Wallace (2001) demonstrated that CAL provides a better learning outcome in improving cognitive function and learning satisfaction than text-based educational modes among patients with diabetes. The CAL system was also effective in creating insight and positively improving knowledge of and attitude towards diseases among patients with bulimia and anorexia nervosa (Andrewes et al., 1996). Furthermore, Burda et al. (1995) also examined the efficacy of the computerized psycho-education program and learning outcome among 27 patients with depression. They concluded that computerized psycho-education programs are more effective than traditional methods in decreasing depression, and improving problem-solving skills and self-awareness.

Wright et al. (2002) investigated the effects of computerized education programs as tools of cognitive therapy among 96 patients with depression. They reported a high level of satisfaction with the different patterns of comuter-assisted instruments. The dynamic and flexible education software guides them in increasing knowledge of illness and treatment and increasing their self-awareness about involuntary thoughts of depression. Tsai et al. (1999) also estimated the effects of computerized education programs used in continuing education on aggressive behavior management for nurses. They also reported a greater improvement in nurses' knowledge scores and a high level of preferences (94.2% of the participants) for computer-assisted learning. However, computer-assisted learning in combination with psycho-education substantially improves patients' learning and knowledge about depression.

Many studies have indicated that a multimedia education is beneficial in advancing knowledge and improving learning satisfaction. However, the multimedia learning style is a new experience for patients with depression. Learning is a subjective, personal and dynamic process. Attitude and behavior changes may occur after a meaningful learning, and are difficult to grasp form any experimentally measured phenomenon since this is a transformation of inner change (Chang, 1996). Piaget (1950) reported that the Cognitive Theory of Development appropriately explains learners' cognitive learning processes (citation from Chen, 2003). This theory asserts that an individual does not respond to all stimuli in the same way and at all times, but actively attempts to understand the whole situation and the relationship between stimuli before commencing meaningful learning (Jian, 1993). Blanton (1998) and Svinicki (1998) also indicate that cognitive learning is a process where an individual selects, encodes, organizes, stores,

retrieves, decodes, and generates information. Thus, a course designer has to understand the process of how an individual learns, memorizes and thinks, rather than focus only on evaluating learning efficacy. The data obtained can be used in developing, correcting and creating new teaching materials and courses (Jeng, 1999).

Methods

Sample

Qualitative in-depth individual interviews and purposive sampling were used from June to July 2003. Psychoeducation and counseling were given to all subjects referred from the OPD, on the basis of two days per week for a total of six weeks. A person was eligible for inclusion if he or she: (1) met the DSM-IV criteria for depression without any other psychosis and experienced their first episode of depression within one year; (2) had completed at least senior high school education; (3) was between 16 years and 50 years of age; (4) had no difficulty in verbal communication; (5) had a computer available at home; and (6) was referred by a psychiatrist and agreed to take part in this preliminary research.

Research Instruments

Interactive computerized psycho-education system (ICPS)

The ICPS for patients with a diagnosis of depression was originally developed by Lin et al. Content validity was assessed using an expert panel consisting of 12 experts and 13 patients with a diagnosis of depression. Each expert independently evaluated and rated the wording, sounds, video and content of the ICPS to identified objectives by using a five-point rating scale: 1 = very bad, 2 = bad, 3 = acceptable, 4 = good, and 5 = very good. A content validity index was calculated. The overall score for the instrument by the 12 experts and 13 patients was 4. Moreover, no statistically significant difference was found between results from experts and patients by using t-test. Results indicated that the ICPS has good practical usefulness and is an understandable, user-friendly and effective tool, with clear wording, for obtaining and organizing knowledge in an acceptable and accessible approach to meet the educational needs of patients with depression (Lin, Yang, Wang, Shen, & Fu, 2003). The ICPS was constructed with four separate sections, which were etiology of depression, treatment, effects and side–effects of medication and symptom management were edited. The contents of each section consisted of six themes, namely, animation scenario, case analysis, education messages, forum, spiritual essay, and self-evaluation. Moreover, the animation scenario involved computer modeling of sound and visual effects, and case analysis. The abstract of lectures combined with computer modeling of sound and visual effects, written summary outlines and slides were edited. Subjects also had the option to read selected slides at their own pace. The educational manual contained a variety of health information. A written quiz consisting of five true/false and five multiple choices questions was designed and used to assess the level of knowledge obtained from the ICPS.

Beck depression inventory (BDI)

The BDI is a standardized research instrument. It is a 21-item test presented in multiple choice formats, and was used in this study to measure presence and degree of depression in the sample. The Chinese version BDI was obtained from Ko, Hwang, & Lee (1996), which has obtained permission from the original developers and translated the English version. A BDI cut-off score of 10 is recommended as optimal for use in screening for major depression in comparing BDI results from other countries. Higher scores are indicative of increased depression. Internal consistency studies demonstrated a correlation coefficient of .87, and the Spearman-Brown correlation for the reliability was .94. In assessing the validity of the BDI, we observed that it appears to evaluate a wide variety of symptoms associated with depression. However, the BDI effectively measures attitudes and symptoms characteristic of depression.

Data Collection

Subjects were selected and referred from psychiatric OPD to a nursing consulting clinic. They were provided with a client-centered health education and counseling session in order to help them identify their worries about depression, and build a therapeutic relationship. The ICPS, educational manual, and on the spot briefing were provided on the complete operation instructions as the need arose. The ability to repeat operative steps successfully on the spot was also ascertained. Subsequently, subjects were informed as fully as possible of the nature and purpose of the research, the procedures, expected benefits to them, and their rights as participants in the research. Furthermore, a range of personal data was collected in order to ascertain the characteristics of the sample. The Beck Depression Inventory (BDI) was used to measure presence and degree of depression in the sample. A follow-up telephone call, carried out by the researcher, was conducted one week later to evaluate the learning outcomes and progress as well as any problems that may have

arisen. All subjects were asked to visit the nursing consulting clinic after two weeks. The completion of two readings of the whole computerized educational package was also expected. In-depth, semi-structured interview using a checklist of items was employed during the visits to the nursing consulting clinic.

Results

A total of 14 patients with a diagnosis of depression were recruited in this study. They ranged in age from 20 to 50, with an average age of 34.8 years. The majority were female (78.6%, *n* = 11) and 21.4% (*n* = 3) were male. Most subjects (64.3%, *n* = 9) were married. More than one quarters (28.6%, *n* = 4) were single and only 1 subject (7.1%) was divorced. More than three quarters (78.6%, *n* = 11) had completed senior high school and a further 21.4% (*n* = 3) had completed junior college or obtained a university degree. The great majority of subjects (85.7%, *n* = 12) was currently in employment. One subject (7.1%) was unemployed currently, and one (7.1%) was a student. More than half the subjects (*n* = 8, 57.1%) reported moderate depression, followed by mild (*n* = 4, 28.6%) and severe depression (*n* = 2, 14.3%), as measured by the BDI. One female and one male subject refused to participate in in-depth interview. Eight subjects successfully completed all the learning activities, and were willing to share their experiences and challenges on issues related to learning from the multimedia education program and personal behavioral changes. Four subjects were unable to finish the whole learning process. The successful self-learning experiences are described in the following section.

Themes for Successful Learning Experience

A learner was considered successful if she or he successfully completed the whole reading of the interactive multimedia education program and the self-evaluation within the two weeks. Four themes that contributed to successful and satisfactory learning experiences were identified among eight successful learners. Successful experiences were: (1) triggering learning motivation; (2) enjoying self-paced learning; (3) supporting the effectiveness of learning materials; and (4) gaining self-awareness and changes.

Triggering learning motivation

Subjects revealed that learning style could trigger learning motivation, resulting in an increased learning capacity, and help their understanding of depression. Furthermore, eight successful learners expressed an interest in the use of computerized learning technology and mentioned reasons which reflected their interests, including "a desire for more understanding about depression-related information", "a sense of curiosity about computerized multimedia learning materials", and "an interest in the content of learning materials".

1. A desire for more understanding about depresion-related information: Subjects revealed that they had an intrinsic desire to learn. They recognized that the multimedia education program could effectively increase their understanding of depression. Seven subjects also said that it could help to strengthen their self-learning motivation and needs. This finding strongly suggests that intrinsic motivation stems from new and meaningful learning. Three examples from subjects are provided to support this sub-theme.

Alice and Edna: *I would like to know what depression exactly is.*

Frank: *I want to know why my doctor told me that I have depression.*

Grace: *I just want to have a better understanding of depression.*

2. A sense of curiosity about computerized multimedia learning materials: This indicates that the learning style taught in this program was quite a novel learning experience. Four subjects remarked on their curiosity about it. It appears therefore, to strengthen their learning motivation. They acknowledged the curiosity and satisfaction they felt from being a learner on this program.

Frank: *This multimedia education program is really a novel idea for patient education.*

Helen: *I am curious to know about the program content. It displays information in a different way from printed teaching materials. What a new idea…*

3. An interest in the content of learning materials: The learning interest was also created from the design and content of the education program. Three successful learners said that the education program was worth while. In particular, they felt that it created opportunities for in-depth learning.

Edna: *The doctors' lectures are excellent. The design of sounds, video, and animation inspires my motivation to learn. I am motivated to learn…*

Dora: *The animation is vivid and when I look at the dramatis characters, I think about myself. It also motivates me to understand the disease and how to face it.*

All of the eight successful learners found the learning very rewarding and readily created and fostered learning motivation and intention. The bulk of subjects were motivated to learn by their inner curiosity about this newly developed learning style and their attraction to this multimedia learning material.

Enjoying self-paced learning

Subjects stated that the multimedia education learning style gave them the opportunity to learn at their own pace and convenience. Reading of the whole education program was gradually completed among 7 subjects.

Alice: *I am too busy at work. I finished the first half first, and then, the second half in another single day.*

Edna: *I only have a chance to read after office hours. I couldn't finish my reading in one go. It took several readings for me to finish.*

Alex: *I am used to browsing first, and then, reading carefully.* Helen: *I tried to finish the whole reading in one day during the summer holiday.*

Most subjects adopted "step-by-step learning" due to factors such as learning habit, work limitation, medication side effects and poor concentration, but one finished in one day during the summer holiday. All subjects performed learning in accordance to personal time schedules and habits, and controlled their progress in order to fit their own preferences. Through such a flexible and democratic learning style, patients are not caged into a restricted and rigid environment to receive important health education. Thus, the commitment to learn is improved.

Supporting the effectiveness of learning materials

This refers to whether subjects feel that the program is effective for depression-specific education, and whether they have positive attitudes towards it as well as recommendations about its potential in future applications. All successful learners recognized that the multimedia education program they received were helpful and beneficial in learning.

Betty: *…if you offer this program to a patient with depression, he/she will know exactly what depression is.*

Frank: *It does help me to have more understanding about depression. It's worth promoting.*

Helen: It*'s the first time I have viewed such a computerized depression-specific education program. This program is excellent. It should be applied to all patients with depression.*

Subjects with successful learning experiences supported the effectiveness of the multimedia education program and felt that it should be applied among patients with depression and could facilitate a significant understanding of the condition. This program could be utilized as a tool for continuing patient education.

Gaining self-awareness and changes

The subjects stated that use of the multimedia education program was sufficient to modify their biased behavior and thoughts and ultimate inner impacts. Subjects presented three sub-themes that contributed to their self-awareness and changes. These were: (1) modifying parochial thoughts, (2) linking to personal experience, and (3) developing new, more effective coping skills.

1. Modifying parochial thoughts: The subjects were able to integrate their previous partial knowledge and what they learned from this program produce a new understanding. Seven subjects indicated the program could modify their thinking and help them to obtain complete knowledge. Three examples follow:

Alice: *I only had a partial understanding of depression before. I am now able to connect what I knew to form a more complete view. ...after learning, I realize that there are in fact many different etiologies that can cause depression*.

Grace: *...I had no idea that there were many causes of depression. I assumed that it was mainly just a result of frustration and stress.*

Dora: *...I thought that there was no possible hope of overcoming depression. I am now starting to regain my confidence.*

2. Linking to personal experience: A wide range of personal experiences along with learned knowledge enabled subjects to develop their self-awareness. This successfully occurred in five subjects:

Alex: *...Depression may have genetic origins. It reminds me that my mother also has depression…. I have high an expectation for myself and expect myself to do well. This is similar to what I have learned from the topic of etiology.*

Helen: *…I had all the symptoms of depression described in the CD…. My depression may be related to the long-standing family conflict and problems between my parents and me.*

3. Developing new, more effective coping skills: The subjects developed new approaches or behaviors for coping with their depression, especially a dramatic change in attitude towards taking medication. Five subjects have developed new behaviors as a result of learning:

Grace: *...I will pay attention to my emotional changes, and regularly visit my doctor as well as take medication.*

Edna: *...Sometimes I don't take medication as I should. I will now do my best to take medications as prescribed.*

Dora: *I will now not stop taking my medication without checking with my doctor.*

The learning approach to this education program has been reported to be effective in changing the behavior of eight subjects with successful learning experiences, mostly on cognition and thought integration and modification, followed by a linkage with past experience, self-awareness, enhancement of insights, and development of new behaviors for coping with illness. Thus, depressive symptoms and a high rate of relapse can be relieved and reduced.

Themes for Learning Difficulties

Learners with learning difficulties were subjects who were unable to complete all the learning activities and a total of four subjects failed. The three main reasons for their rejection of the activities were environmental impacts, being accustomed to traditional learning, and lack of the necessary computer skills and support.

Environmental impact

Four subjects felt that a range of environment impacts contributed to their incomplete learning. For instance:

June: *I am busy at work. Later back home, I still have to do housework…. My daughter needs the computer during the evening.*

Cindy: *I am busy at work and caring for my children. I felt sleepy when sitting in front of the computer.*

Amy: *I am busy with on accounting work. As a result, I forget to read.* Sara: *My daughter is going to take an examination. I have no time for that.*

Busy careers and family influences encroached on their initiative and motivation in learning. They felt unable to finish the self-learning process.

Accustomed to traditional learning

This referred to subjects, being unaccustomed to using computers and preferring traditional learning. Three out of the four subjects preferred to read books:

June: *I am accustomed to reading information sheets or books about depression. They are simple and more convenient for me.*

Cindy: *I am sorry that I only read the educational manual you provided since it is unnecessary to sit in front of a computer and operate it.*

Subjects felt that multimedia learning style was not as convenient as that of information sheets or books. They were not accustomed to computerized learning.

Lack of necessary computer operation skills and good computer support

Subjects tended to find that their home computers were not effective at displaying the content of the CD. They also lacked the necessary computer skills and needed assistance from others. Two of them described such problems:

Cindy: *Probably, my computer is in a bad condition. It takes a long time to run the program.*

Amy: *...My daughter recently has not been in the mood. She used to turn on the computer for me. I cannot do it by myself.*

All 4 subjects with unsuccessful learning experiences reported that limitations in their computers and operating system reduced the systems' usefulness, making them generally slow and ineffective at information processing. These limitations led to loss of patience. Moreover, subjects who could not operate computers well developed high levels of frustration by not being able to trigger their learning motivation sufficiently, due to their unfamiliarity with the computer.

In summary, environmental impact, being unaccustomed to traditional learning, and lack of computer operation skills and good computer support appear to be the main factors discouraging learning. Subjects felt frustrated with computer operations before they started learning. These factors inhibited them from triggering a strong intrinsic motivation to learn. However, the study sample are not performing the way they are expected to is because

of the negatively influencing factors analyzed above, not because they rejected e-learning.

Discussion

Creation of Successful Learning Experiences

Inspiring motivation to promote learning

A patient's willingness to learn is deeply affected by his/her motivation. Triggering learning motivation is fundamental to successful learning. The current study showed that this program not only satisfied subjects' learning needs, but also fully inspired their curiosity and interests. This proved, therefore that the program was effective in triggering learning motivation.

Blanton (1998) indicated that well-designed learning materials must meet an individual's needs and evoke his/her interests and curiosity. Chang and Liu (2001) also suggested that multimedia learning materials incorporating pictures, animation, sound and video, could encourage learners to keep a long-standing interest in watching and learning. Similar findings were reported by Ju (1999), who states that the visual editing features of a good learning material should have colorful images and stereo sound which can trigger the motivation to learn. We suggest that a good learning material be developed on the basis of different learning needs and differences in order to promote individual commitment to learning, and thus enhance learning efficacy.

Flexible learning and gaining control

The successful learners enjoyed self-paced learning and reported that, as learners, they were given great flexibility, control and freedom in their learning process. This differs from traditional learning, which is controlled by a trainer, typically in a classroom setting, and only allows a limited number of learners at a fixed time. Greenhalgh (2001) believes each learner can progress at his or her preferred pace. They can repeat, interrupt, and resume at will. Chen (2003) indicated that the multimedia teaching style, which combines information from different sources by bringing them together, is an un-oppressive and easier learning method. It also provides a learning resource available at the learner's convenience without limitations of time and space, enhancing learning efficacy and outcomes. This is supported by another study (Blanton, 1998) confirming the importance of continuous interaction between learners and learning environment, and suggesting that this interaction is relatively likely to enable learners to assess their individualized learning needs and take good control of their learning progress. However, eight subjects with successful learning experiences in the current study arranged learning schedules based on their specific needs, physical and psychological conditions, and time and space available on an individualized basis. This educational program was, therefore, delivered with the student's comfort and convenience very much in mind. The limitations of trainers and fixed learning locations were minimized and freedom to learn was maximized.

Be aware of self and evoking changes

Through this learning process, subjects become aware of past parochial thoughts and perspectives. It also assists subjects to strengthen their continuous self-learning motivation and undergo personal behavioral modification. Cognitive comprehension is a typical human learning skill involving cognitive recombination. It forms new understandings (Jeng, 1999). Svinicki (1998) and Blanton (1998) also suggest that a learner can keep, integrate, reorganize segments of previous knowledge, and rebuild a new framework of knowledge through continuously interacting with external stimuli in order to generate a new behavior. In the current study, the subjects absorbed new knowledge, changing past parochial thoughts through interaction with the education program. It helped them to integrate and review the segments of knowledge they had retained and enhanced their capacity for self-awareness. Consequently, a new behavior was developed.

Obstacles to Learning

Four subjects did not complete the learning process. Environmental impact was the main reason. Being accustomed to traditional, paper-based learning affected subjects' intention to learn from e-learning. Furthermore, unfamiliarity with computer operation procedures also seems to impede the learning process. As Money (1996) mentioned, a number of factors, such as motivation, teaching material, environment, emotion, media equipment, and work all influence people's individual learning processes. This is supported by Chang and Liu's view (2001) that learners have a preference for multimedia learning materials. For instance, some may prefer hyper-linked, plain-mode learning materials or paper-based notes to online video-audio materials. In the current study, four subjects with unsuccessful learning processes were female, married, and an educated to senior high school level. Three of them were employed, with young children to look after.

They did not have time to work on computers. Moreover, their opportunities to learn were limited by their heavy workloads, family interference, insufficient computer support, and their being accustomed to paper-based materials. This phenomenon is in line with Lee's findings (2000); as adult learners have high heterogeneity and diversity in learning, these differences may impact on learning experience and particularly computer-assisted learning. The computer-assisted learning style is prone to be affected by computer equipment, skills and other factors. If nurses can take into account all individual's needs, such as time limitations, and provide adequate learning environment as well as attempt to strengthen the skills required, this can have an enormous effect, which will ultimately reduce learning disturbance and trigger successful self-learning motivation.

In summary, the learning process of successful learners in the current study was as follows: first, it is important to trigger the subject's motivation to learn. The subjects enjoy self-paced learning in a free learning environment and their willingness to learn is strengthened. Motivation and flexibility are the key elements for the successful completion of learning in this stage. It can be concluded that the triggering of motivation is the main factor for successful learning. Furthermore, such a successful self-learning experience, not only increases subjects' knowledge of depression, but also facilitates personal behavioral changes. The successful learning experience is illustrated in Figure 1.

Conclusion and Recommendations

The present study has analyzed and explained successful and unsuccessful self-learning experiences on a multimedia education program among patients with depression. With the support of this specially designed program and through subjective experience sharing, the program was effective in evoking subjects' enthusiasm for self-learning, increasing insights into depression, and modifying inadequate behaviors. However, the learning process was also limited by environmental impacts, the students being accustomed to traditional learning, and a lack of adequate computer skills and support. It is imperative that health professionals attempt to resolve these issues where possible. This will inspire and motivate patients' awareness and interest in self-learning. Furthermore, it is suggested that this multimedia education program be imlemented in different psychiatric care settings or rehabilitation institutions and thus made widely available and accessible to the public. The ongoing use in clinical settings will enable evaluation and confirmation of its effectiveness. Finally, it is of concern that building an adequate, undisturbed computerized learning environment, training patients in computer skills and encouraging different learning styles are important if patients with depression are to be actively helped and supported and psychoeducation services actually to be served.

Acknowledgment

Special thanks to the Bureau of Health Promotion, Department of Health, Taiwan, ROC. The development of multimedia education program used in this study would not have been possible without their funding support [Grant Number B91-064, year 2002]. This has had great benefits in terms of knowledge and the acquisition of depresion-related information for patients.

References

Andrewes, D. G., O'Connor, P., Mulder, C., McLennan, J., Derham, H., Weigall, S., et al. (1996). Computer-

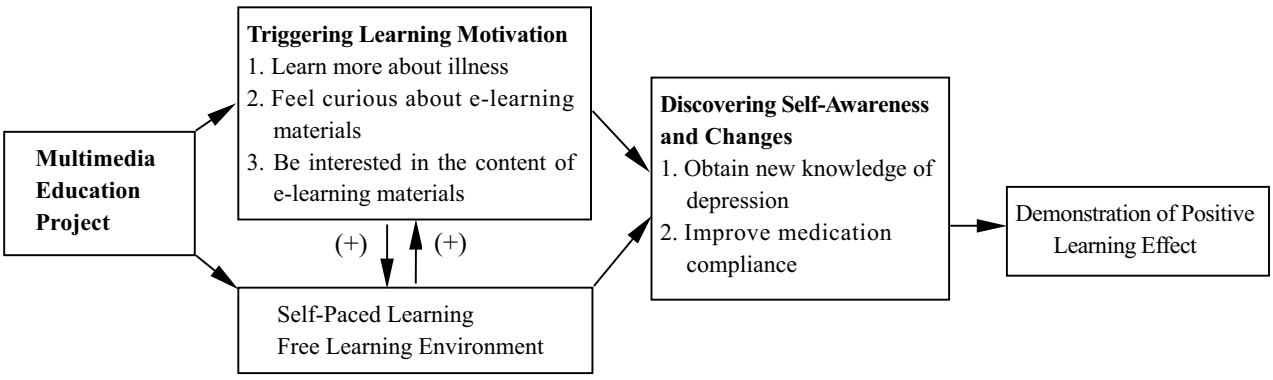

Figure 1. Self-Learning process and experiences of successful learners.

ized psychoeducation for patients with eating disorders. *Australian and New Zealand Journal of Psychiatry, 30*(4), 492-497.

Burda, P. C., Starkey, T. W., Dominguez, F., & Tremont, M. R. (1995). Computer-assisted psychoeducation of psychiatric inpatients. *Computer Education, 25*(3), 133-137.

Blanton, B. B. (1998). The application of the cognitive learning theory to instructional design. *International Journal of Instructional Media, 25*(2), 171-178.

Chang, C. S. (1996). The theory of learning. *Psychology* (pp. 112-151). Taipei: Dung Hua.

Chang, J. C., & Liu, Y. C. (2001). The application of SMIL and development of interactive multimedia materials online. *Journal of Information and Education, 82,* 12-26.

Chen, M. C. (2003). Comparison of learning efficacy between multimedia and conventional instruction. *Journal of Educational Technology and Media, 63,* 49-64.

Christopher, D. (2000). Problem solving treatment and group psychoeducation for depression: Multicentre randomized controlled trial. *British Medical Journal, 321,* 1450-1456.

Fang, L. H., Chen, J. J., & Chen, C. C. (1998). Therapy for depression. *Formosan Journal of Medicine, 2*(4), 456-463.

Greenhalgh, T. (2001). Computer assisted learning in undergraduate medical education. *British Medical Journal, 322*, 40-45.

Ju, Y. P. (1999). The application of multimedia in education. *Journal of Information and Education, 72*, 15-25.

Jeng, S. M. (1999). The content and inspiration of cognitive learning theory in education. *National Taichung Teachers College Journal, 13*, 57-71.

Jian, H. J. (1993). The application of cognitive learning theory in micro-teaching. *National Hsin Chu Teachers College Journal, 6,* 85-104.

Ko, H. C., Hwang, K. Y., & Lee, Y. D. (1996). An application of Beck Depression Inventory on screening for perinatal depression in Taiwan. *Taiwan Journal of Public Health, 15*(3), 208-219.

Lee, C. R. (2000). Exploring the influencing factors of multimedia on education among students of The National Open University. *Teaching Technology and Media, 52,* 11-18.

Lin, E. H., Simon, G. E., Katzelnick, D. J., & Pearson, S. D. (2001). Does physician education on depression management improve treatment in primary care? *Journal of General Internal Medical, 16*, 614-619.

Lin, M. F., Yang, M. R., Wang, C. C., Shen, L. H., & Fu, L. S. (2003). A prospective study in the development of interactive computer-assisted health education system. *A congregation of health education results for health care organizations and institutions, 2002.* Taipei: Bureau of Health Promotion, Department of Health, Taiwan, ROC.

Mynors-Wallis, L. M., Gath, D. H., Day, A., & Baker, F. (2000). Randomized controlled trial of problem solving treatment, antidepressant medication, and combined treatment for major depression in primary care. *British Medical Journal, 320*(7235), 26-30.

Money, W. H. (1996). Applying group support systems to classroom settings: A social cognitive learning theory explanation. *Journal of Management Information Systems, 12*(3), 65-81.

Radjenovic, D. & Wallace, F. L. (2001). Computer-based remote diabetes education for school personnel. *Diabetes Technology & Therapeutics, 3*(4), 601-607.

Svinicki, M. D. (1998). A theoretical foundation for discovery learning. *Advances in Physiology Education, 20*(1), S4-S8.

Tsai, S. L., Dung, J. L., Lin, S. L., Chen, M. B., Lin, H. L., & Guo, Y. L. (1999). Assessment of the efficacy of multimedia violation management curriculum. *Veteran General Hospital Journal of Nursing, 16*(3), 264-273.

Thompson, C., Kinmonth, A. L., Stevens, L., Peveler, R. C., Stevens, A., Ostler, K. J., et al. (2000). Effects of a clinical-practice guideline and practice-based education on detection and outcome of depression in primary care: Hampshire Depression Project randomized controlled trial. *Lancet, 355*, 185-192.

Wells, K. B., Sherbourne, C., Schoenbaum, M., Daun, N., Meredith, L., Unutzer, J., et al. (2000). Impact of disseminating quality improvement programs for depression in managed primary care. *Journal of the American Medical Association, 283*(2), 212-220.

Whooley, M. A., Kiefe, C. I., Chesney, M. A., Markovitz, J. H., Matthews, K., & Hulley, S. B. (2002). Depressive symptoms, unemployment, and loss of income. *Archives Internal Medicine, 162*, 2614-2620.

Wright, J. H., Wright, A. D., Salmon, P., & Beck, A. B. (2002). Development and initial testing of a multimedia program for computer-assisted cognitive therapy. *American Journal of Psychotherapy, 56*(1), 76-86.