AN EVALUATION OF A

COMPUTER ASSISTED INSTRUCTION LESSON

By

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B.S.N., The University of British Columbia, 1977

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Department of Administrative, Adult, and Higher Education)

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

December, 1984

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ABSTRACT

This research report evaluates a computer assisted instruction (CAI) simulation exercise developed according to guidelines developed by Gagne, Wager and Rojas (1981). The simulation exercise was evaluated in terms of: (a) its consistency with these guidelines, and (b) the ability of the learner to achieve the desired objectives. The helpfulness of these guidelines in the development of a quality CAI simulation exercise was also evaluated.

Computer assisted instruction is being increasingly used in health sciences instruction. Although there is research available describing its use in medical and undergraduate nursing education, there is limited information on its use in postgraduate nursing education. This research project attempted to: (a) increase the general knowledge base of CAI in continuing nursing education, and (b) evaluate one set of available authoring guidelines.

The research project used a one group, three test design. A learning module was developed by the author to provide psychiatric nurses with the basic knowledge needed to conduct a mental status examination. A CAI nurse-patient
simulation exercise was written to provide an opportunity to apply this knowledge. It was written according to guidelines proposed by Gagne, Wager and Rojas (1981). Information on the subjects' progress was gathered by a series of tests which assessed mastery and application of mental status examination knowledge and skill. Further data were gathered via a questionnaire on the subjects' attitudes towards the computer, CAI in nursing and the CAI simulation exercise.

Following the learning module, there was a significant increase in mental status examination knowledge. A significant increase in mental status examination application skill was also noted on a paper and pencil test administered after the CAI simulation exercise. Subjects also displayed significant improvement in their ability to write a short and concise mental status examination summary.

The post-CAI attitude questionnaire found subjects feeling more comfortable with the learning experience. Although supportive of the use of computers in nursing, it was seen more as a tool for nursing schools than continuing education. Subjects also expressed some doubts as to whether CAI was as good as other instructional techniques for practising a mental status examination.

Some additional findings were noted: (a) familiarity
with a typewriter or computer keyboard seemed to decrease the time taken to complete the CAI simulation exercise, and (b) previous computer experience also played a role in reducing CAI completion time.

The computer hardware seemed to interfere with the learning experience. Subjects were anxious about doing three tasks simultaneously: (a) a simulation exercise, (b) learning to type, and (c) interacting with the computer. Several expressed fear of breaking the computer.

The present results suggest that CAI should remain as an adjunct to other methods of continuing education. The nursing profession must increase its knowledge in authoring CAI courseware. Potential CAI authors need time and an opportunity to refine their skills. Potential users also require more experience with both computer hardware and software.

Computer assisted instruction authoring guidelines need to be developed and tested. Guidelines proposed by Gagne, Wager and Rojas (1981) are an excellent beginning, but more research in this area is necessary if CAI is to become a useful approach to continuing nursing education.
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ACKNOWLEDGEMENT

I would like to express my appreciation to a number of people who helped me make this research possible.

To my committee members, Dr. Thomas J. Sork and Dr. Marvin Westrom--thank you for the patience and encouragement you have shown to me throughout this study.

To my mother--a special thank you for all the typing. You can retire the machine now!

To Rob--I don't know how you have put up with this for FIVE YEARS. Thanks for your support!
CHAPTER I

INTRODUCTION

Purpose

The primary purpose of this study was to critically evaluate a computer assisted instruction (CAI) lesson. This lesson utilized a simulation exercise developed in accordance with guidelines for CAI authors proposed by Gagne, Wager and Rojas (1981). The information can: (a) contribute to existing adult education knowledge regarding CAI, (b) help define the role of CAI in continuing nursing education, and (c) determine if those guidelines developed by Gagne et al are helpful in the development of a quality CAI simulation exercise.

Problem Statement

Since their introduction, programmed learning and teaching machines have been viewed as promising instructional tools. During the 1970's and early 1980's, there has been a growing interest in CAI which has been reflected in: (a) an increase in published research studies, (b) the development of CAI courseware by educators, businesses and publish-
ing companies, and (c) the founding of the Association for the Development of Computer-based Instructional Systems (ADCIS) and similar professional associations concerned with the advancement and promotion of computer-based instruction. While the qualities of independent, interactive and self-directed instruction have been maintained, CAI has introduced the element of computer-based technology.

Computer assisted instruction is receiving special attention in the health sciences. Porter (1978) notes that "although there is a lack of data regarding the relative effectiveness of CAI, there is sufficient literature from applications in medicine and undergraduate nursing to suggest that it has capabilities for revolutionizing continuing education in nursing" (p. 5). Although there is literature describing applications in medical undergraduate and postgraduate education, there has been little work published on applications in postgraduate nursing education.

Because nurses are one of the largest groups of health professionals, they will become increasingly involved in utilizing computers in health care. Institutions are incorporating hospital information systems within their communication network. Computer assisted instruction courseware is now being developed and marketed by private firms and publishing companies, which enable computers to perform educational functions in addition to their traditional
administrative functions. As resources available for educational purposes dwindle, more employers are considering using the computer to perform this additional role.

Computer assisted instruction has certain advantages over more traditional teaching techniques. It provides scheduling and response flexibility for the students, introduces variety, and is non-punitive, visual and reliable. It can also simulate an actual interchange with appropriate feedback and, perhaps most important, CAI is a highly individualized instructional technique combining both teaching and testing capabilities.

Among the limitations of CAI are the time taken to write just one hour of valid and reliable lesson material, the cost of the initial outlay for computer hardware and the lack of standardization of software.

A large portion of the available research in CAI and continuing nursing education pertains to lessons utilizing either drill and practice or tutorial exercises. Few published studies exist relating the use of CAI to simulation exercises. This writer was able to find only one set of authoring guidelines specific to CAI simulations (Gagne, Wager & Rojas, 1981). Although the least common and most difficult form of CAI lesson to design, it is a popular instructional strategy for complex intellectual skills, such as problem-solving.
There are many questions related to CAI that have no definitive answers. For example: Do registered nurses enjoy this type of learning experience? What aspects of CAI must the nurse educator take into consideration to produce a quality simulation exercise? Is CAI appropriate to use in postgraduate continuing nursing education?

There is a lack of available research describing the use and effectiveness of CAI simulation exercises in continuing nursing education. Existing CAI simulations vary in the degree to which they incorporate learning theory, educational principles and creative programming techniques.

**Hypotheses**

The following hypotheses guided this study:

1. That participants in the study could acquire the knowledge necessary to administer a mental status examination.

   This was evaluated by means of pre and posttesting of mental status examination knowledge.

2. That participants in the study could
apply their mental status examination knowledge to a CAI nurse-patient simulation exercise.

This was evaluated by means of pre and posttesting of mental status examination application skill.

3. That the guidelines for CAI authors used in this study (Gagne, Wager & Rojas, 1981) are helpful in the development of a quality CAI simulation exercise.

This was evaluated by means of a pre and post-CAI questionnaire, and a follow-up interview.

**Overview of Thesis**

This thesis is divided into five chapters. Chapter One presents the purpose of this study, the problem statement, and the research hypotheses.

Chapter Two presents a review of literature in continuing nursing education and individualized learning. Research in CAI and nursing education is then examined in terms of
user performance, user attitude and simulation authoring guidelines. The latter section includes information on simulation exercises, CAI authoring languages, and available authoring guidelines.

Chapter Three describes the methodology used in this study. A description of the subjects and a brief summary of the two instructional tools developed (a learning module on mental status examination and an accompanying CAI simulation exercise) is also presented. The tests and questionnaires used for data collection are described, and the research procedures are outlined, including an overview of how the data were analyzed.

Chapter Four presents results from this study. Information on response rate and subject characteristics are followed by the data relevant to each of the three hypotheses. A summary of these results concludes the chapter.

Chapter Five presents a discussion of the results. Limitations of the study are identified, implications arising from the study are proposed, and conclusions relevant to continuing nursing education and future research in CAI are listed.
CHAPTER II

REVIEW OF LITERATURE

Pertinent literature is reviewed in this chapter. Background information on continuing nursing education and individualized learning are discussed first. This is followed by a review of current research on CAI and user performance, user attitudes and simulation authoring guidelines. Information on simulation exercises and CAI authoring languages is also included.

Continuing Nursing Education

The University of British Columbia Health Sciences Centre School of Nursing, Continuing Nursing Education (1973) describes professional education in nursing as a continuum that includes undergraduate, graduate and continuing education. Hamelin (1967) of the World Health Organization describes the objectives of continuing education as to "further the knowledge and ability of personnel to help them to maintain that already gained, to enable them to evaluate existing practices and their own performance, and to exercise intelligence and judgement--and to utilize staff
contribution to the improvement of the services they help to provide" (p. 6).

The mandate of the University of British Columbia School of Nursing, Continuing Education Division (1973) is described as "the maintenance of competence in nursing—[competence which is] dependent upon continued learning during the practice lifetime of the nurse" (p. 1). Cooper and Hornback (1973) view the major reasons for continuing education in nursing as not only the improvement of professional practice, but also the development of the person as an individual and a responsible citizen. Houle (cited in Cooper & Hornback, 1973) believes that the major education of the nurse should take place during one's professional life, with a deliberate use of nursing experience for learning purposes. The above viewpoints are in accordance with those held by many adult educators regarding the value of life-long learning. Nevertheless, the major reason for continuing education is the improvement of professional practice.

The State of California agrees, for in 1971 legislation was passed requiring registered nurses to meet continuing education requirements for licensure renewal (Cooper & Hornback, 1973). Other state legislatures have not instituted these proposals for mandatory professional continuing education because it was predicted to cause an increase in health care costs. Some reasons might be: (a) nurse educators would
need to be hired to provide staff training and development, (b) staff nurses on education leave would need to be replaced at a higher rate of pay, and (c) ward functioning and morale would decrease as more replacement staff were used. As a result, these amendments to the Health Professions Practice Act were eliminated in California in 1979. Despite this, both health costs and the demand for continuing education programs in the health sciences continue to rise in California and British Columbia.

In-service education is one aspect of continuing education investigated in this study. This is described as a planned instructional or training program provided by an employing agency in the work setting designed to increase competence in a specified area (Cooper & Hornback, 1973).

Although formal education prior to employment provides knowledge, skills and attitudes necessary for the particular professional, these may or may not be related to specific competencies or skills required by a given occupational role, such as nursing. Dickenson and Verner (1974) feel that in-service education can supply those missing ingredients for role proficiency within the institutional setting. It can supply the educational activities that are immediately relevant to the needs of the organization, the job and the employee. Other purposes of in-service education include a developmental function to help employees keep abreast of new
information in their specialized field, to assist the professional in maintaining previously learned competencies and to prepare for advancement to positions of greater responsibility. Another purpose is to ensure that changes that have been introduced in the sponsoring organization are adopted and continued.

Different methods are used to achieve the objectives of continuing nursing education—individual and group instruction are two.

**Individualized Learning**

According to Liveright (1964), one of the distinguishing characteristics of a profession is the commitment by its members to continued study. The American Nurses Association Council on Continuing Education in Nursing (cited in Buchholz, 1979, p. 12) has looked closely at self-directed education as a means of achieving this purpose. They have proposed the following definition of self-directed learning:

...one for which the learner takes the initiative and responsibility for the learning process. In the design of the activity, the learner controls one or more of the following learning variables:
1) diagnosis of needs
2) topic and purpose of study
3) objectives and expected outcomes
4) plan of study
5) appropriate experience
6) learning resources
7) environment
8) time
9) pace and sequence
10) method(s) of evaluation
11) method(s) of documentation (p. 12)

The individualized learning module was one tool for self-directed learning used in this study. It contained three elements presented in the previous definition that were controlled by the learner: those of environment, time, and pace and sequence.

1. Environment—it is possible for the learner to utilize the model where it is most convenient to him or her.

2. Time—the learner (or others) can decide when to begin the learning module. There are no time restrictions on its availability.

3. Pace and Sequence—the learner may learn at a rate that is consistent with his/her abilities, background and experience. The module is also organized so that the learner can progress through a mental status examination in an orderly fashion. He/she could review sections that were found difficult, or skip those that were found too elementary.

By including these characteristics in the module, the learner was encouraged to be an active participant in the
educative process, and take some of the initiative and responsibility described previously. Rogers (1969) believes that learning is facilitated when the student participates responsibly in the learning process.

Dick and Carey (1978) define a learning module as "a self-contained or self-instructional unit of instruction that: has an integrated theme, provides students with information needed to acquire specified knowledge and skills and serves as one component of a total curriculum" (p. 5). Hinthorne (1980) has identified eight steps in the development of a module. They are as follows:

1. Define the target population.
2. Develop behavioural objectives.
3. Choose appropriate learning objectives.
4. Space study questions and answers throughout the module.
5. Include pre and posttest to measure attainment of objectives.
6. Use brief and simple directions for the use of the learning module.
7. Make sure the instructor is available as a resource person.
8. Include an evaluation of the module and encourage student feedback.
The learning module is a form of programmed instruction. As is characteristic of learning modules, the student can progress at his/her own pace. This self-pacing quality makes it quite appropriate for in-service education (as well as other areas of adult education).

The Center for Programmed Instruction Inc. defines an instructional program as "a sequence of carefully constructed items leading the student to mastery of the subject with minimal error. Information is given to the student in small units to which he responds in some way: by completing a sentence, working with a problem, or answering a question. Items are designed so that the student can make correct responses while progressing toward more and more complex material" (cited in Lewis, 1962, p. 464).

Schramm (1962) identified the following essential elements of programmed instruction:

1. an ordered sequence of stimulus items,
2. to each of which a student responds in some specified way,
3. his responses being replaced by immediate knowledge of his results,
4. so that he moves by small steps,
5. therefore making few errors and practicing mostly correct responses,
6. from what he knows, by a process of successively closer approximation, toward what he is supposed to learn from the program (p. 2)

Hinthorne (1980) also identified basic steps in the development of a learning module. The first is to define the
target population. Identifying their knowledge and skills is vitally important in the creation of the programs' objectives and design. Following the setting of behavioural objectives, appropriate learning activities can be chosen. The choice will be dependent on the instructors' abilities and resources as well as the type of learning outcome. The module should include study questions and answers to provide feedback to the student regarding his/her attainment of the objectives. A pre and posttest will produce evidence of their learning. In addition to these essential elements of an individualized learning module, three other factors need to be included. These are: (a) brief and simple directions for its use, (b) the instructor being available as a resource person (some students require instruction on the use of, for example, audiovisual equipment), and (c) finally, an evaluation of the module in terms of its appropriateness, effectiveness and practicality.

A learning module frees the instructor from monotonous repetition of the material. He/she can utilize this time as a resource person or facilitator, or for the development of other modules.

Another form of learning is computer assisted instruction (CAI). Collart (1973) states that "Inasmuch as CAI can provide valuable data on how, as well as what, students learn, it contributes both to teaching theory and curriculum
development and can be used not only to evaluate student progress but also to refine and improve the teaching process" (p. 528). Tests within the lesson, for example, can be used to measure student learning and also serve as a means to adapt the program to the needs of the learner. The special capabilities provided by the computer include simulation, drill and practice, tutorial and testing capabilities.

Usually in CAI, according to Olivieri and Sweeney (1980), students are given a choice of objective responses with an instantaneous computer reaction to their choice. This technique has been borrowed from programmed instruction, but CAI differs in its greater capacity to offer learners a larger number of options and responses through its branching techniques.

Learners can also receive immediate feedback of a different kind—receiving answers to the questions they themselves pose. They then proceed to the completion of an assessment, just as in a clinical setting.

The joining of CAI programs and learning modules can facilitate the development of a high level of competence in practice, regardless of the immediate availability of qualified instructors (Porter, 1978). Important information concerning the development and use of CAI in the health professions, especially nursing, can be discovered.
Current research in CAI and the health sciences focus on two main areas: (a) user performance and (b) user attitude.

**CAI and User Performance**

Computer technology is being used more and more as an instructional tool in institutions. For example, Stanford Medical Center is using a computer program to teach psychotherapeutic interviewing skills (Hillman, 1971). The University of California employs the program CONSULT to simulate a psychiatric consultation as an exercise in information gathering and diagnosis (Brigham, Kamp & Cross, 1972). Ohio State University Medical School utilizes PILOT to instruct its students about psychosocial development (Brigham, Kamp & Cross, 1972).

Undergraduate and post-graduate nursing education has also utilized and researched the effectiveness of CAI. Valish and Boyd (1975) wished to determine whether CAI programs were a resource by which nurses could verify and add to their existing clinical knowledge. Using two current programs at the George Washington Medical Centre, they found that although the programs verified the learners' knowledge, there was no evidence to support their second hypothesis of augmenting existing clinical knowledge. It should be noted
that this study used only a posttest design—the respondents' previous knowledge was never determined.

Computer assisted instruction was again studied with respect to teaching registered nurses how to do cardiac pulmonary resuscitation in a hospital setting. Hoffer, Mathewson, and Loughrey (1975) used a pretest, posttest, control group design. The experimental group significantly improved their performance on an independent test of knowledge, while the control group which had been exposed to more traditional education activities showed no improvement. A limitation of this study was the use of tests designed for physicians instead of registered nurses. An important finding was that user satisfaction concerning the technical aspects of terminal utilization increased.

Huckabay, Anderson, Holm & Lee (1979) have studied the effect of CAI versus lecture and discussion with nurse practitioner students. The results showed no significant differences between the control and experimental groups in cognitive learning, transfer of learning and affective behaviours. However, although both groups displayed a significant degree of learning, only the experimental group scored higher on the posttest and was able to transfer this knowledge to their clinical practice.

A widely used computer language named PLATO (Programmed Logic for Automated Teaching Operations) was used by the
Department of Nursing at California State University (Long Beach) to teach pharmacology to nursing students (Timpke & Janney, 1981). The failure rate prior to the implementation of CAI was almost 50%. Now it is not unusual for all students to pass the course. Reasons cited for its success are its qualities of feedback, individualization and, most important, pacing.

The School of Nursing at Mercy Hospital, Urbana, Illinois, is another advocate of CAI. Again utilizing PLATO (but this time to teach maternity nursing), Bitzer and Boudreaux (1969) found that students in the experimental group did as well or better than those who experienced a lecture with a nursing professor. The more active the student was in the educative process (an essential characteristic of CAI), the more he/she seemed to learn. Although some students preferred the lecture technique, most enjoyed and accepted PLATO.

CAI and User Attitude

Of six schools of nursing in Vancouver, only two include courses in computer technology or utilize it as a teaching device. Imagine nurses' attitudes, therefore, when they come in contact for the first time with this tool.

The Bitzer & Boudreaux (1969) study discovered that
students tend to attribute human characteristics to the computer, and often expect humanlike responses. This could be due, in part, to the novelty of CAI and/or its feedback and individualization feature.

A second finding is the large majority of respondents who were able to concentrate on the computer lesson instead of the computer hardware. The study does not state what prior knowledge of computer technology the students had attained, nor does it compare their feelings and attitudes before and after the CAI experience. It is also unclear if any information on computers was imparted to the subjects prior to their CAI experience which might have decreased their initial anxiety.

Another study in which the students reported enjoying the learning experience was that conducted by Kirchoff and Holzemer (1979). The objective was to examine the effectiveness of a CAI program—specifically, one in post-operative nursing care for student nurses at the University of Illinois (Chicago). The evidence suggested that the participants learned the material. In fact, the students' perception of the degree of dullness of learning on the computer system was found to be inversely related to learning.

Ronald (1979) conducted a study at the School of Nursing, State University of New York, Buffalo. Its purpose was to assess undergraduate nursing students' attitudes
towards the present and potential impact of computers on the health care system, nursing profession and the client. Negative attitudes towards computers were found among subjects before exposure to CAI. They described the computer as dehumanizing, unreliable, scary and complicated. Following their computer experience, not only did the student nurses accept the computer as a teaching tool, but there was a change in the students' attitude toward using a terminal and the development of a more positive feeling towards computers in general.

The original negative attitudes discovered by Ronald (1979) seemed to originate from fears that the computer would dehumanize health care and replace some or all essential professional nursing functions. The "hands on" experience helped to alleviate their fears and assisted them in accepting the computer as a learning tool. The clinical simulations were found to be the most preferred type of CAI lesson.

Despite the popularity of CAI simulation exercises, there has been little research published in nursing journals describing their development and benefit to continuing nursing education.
Simulation Exercises

Simulation exercises involving a "practice patient" are currently utilized in psychiatric hospital in-service programs via audio-visual equipment. These may involve pre-recorded video-tapes or role-playing situations. The element of feedback regarding the learner's progress may or may not be included. Usually these educational activities include an instructor, are held within a specified period of time, need to be repeated, and take the nurse away from the ward situation. Lasor (1979) contends that the primary use of simulation is to examine student knowledge or practice a new skill. This is not only appropriate for the student nurse but can be applied to CAI in continuing education as well.

The literature describes the benefits of the simulation technique, especially in health sciences instruction, but little research has been done which examines its relevance to CAI. Since there is research to indicate that the degree to which students find a computer lesson interesting influences the learning that will take place, simulation exercises bear further investigation.

Meadows (1977) identifies simulation as a complex computer teaching strategy. It can provide a quality simulated clinical experience. It also tests decision making based on knowledge and allows the participant to experiment
safely.

Two advantages of simulation are that it provides the student with a "hands on" controlled laboratory experience and forces him/her to not only understand but apply the content. The main disadvantages of simulation are the difficulties encountered and time required to produce a high quality lesson.

Brigham (1973) has noted that the computer is very well suited for simulating the role of a patient in a physician-patient encounter. This can have a direct influence on the choice of techniques used for continuing education in the health sciences. Simulated situations have advantages in nursing education. DeTornyay (1970) has stated that students could initially become involved with a hypothetical patient through a computerized program, identify nursing problems, test solutions, and find out the results of their interventions without involving real patients.

**CAI Authoring Languages**

Computer languages have been developed which allow an educator with minimal programming skills to "write" for the computer. These include general purpose and CAI authoring languages. Two popular general purpose languages are BASIC and PASCAL.
BASIC (Beginners All Purpose Symbolic Instruction Code) was developed so that computer programming could be performed after minimal instruction. It is one of the most popular languages in existence. Although easy to learn and use, many versions are available in the software market. This can limit transportability of programs between computers and/or programmers.

PASCAL, named for a 17th-century mathematician, was developed in Switzerland. Like BASIC, it was originally designed for use in education (Chambers & Sprecher, 1983), and is another very popular language. PASCAL is transportable between computers and programmers, and executes two to three times faster than BASIC. However, the CAI author must spend more time to learn PASCAL's functions and routines.

Instructional languages are designed for writing CAI-type programs. PILOT (Programmed Inquiry, Learning Or Teaching) is specifically aimed at developing CAI materials. Although in existence since the late 1960's, it is still popular because of its education-specific commands ("answer" and "match"), improvements such as the use of sound and graphics, and the ability of the CAI author to test his/her lesson as a student in the design stage.

NATAL (National Authoring Language) was originally designed by the National Research Council of Canada and its Associate Committee on Instructional Technology. NATAL is
very flexible, and its built-in functions and utilities speed up the production process. NATAL programs may be very large, thus requiring a large amount of computer memory. This language is harder for the non-programmer to use than other authoring systems. The CAI author may require programming skills to fully utilize its potential.

COURSEWRITER has been redesigned at the University of British Columbia. It is available on the university's Michigan Terminal System (MTS). COURSEWRITER can be used in either AUTHOR or STUDENT MODE, thus the CAI author can evaluate the lesson in its design stage.

The aforementioned languages are only a few currently used to develop CAI courseware.

Authoring Guidelines

George (1966) cited a five stage plan for preparing CAI lessons. The first stage of his outline is entitled "Specification." Clear specification of the audience and goal of the lesson is vitally important to the testing stage to ensure that the lesson is assessed in light of its intended purpose. This would include such items as the age and IQ range of students, the knowledge with which the student enters and leaves and the purpose of the CAI lesson
(formal or informal qualification).

In the second stage the contents are prepared and ordered prior to presentation. Following this, a flow chart is made of all prompts and responses that will be included. This needs to be written frame by frame, and may use a branching technique. Once the frame writing is completed, the lesson can then be tested. Its routing, layout and diagrams are carefully rechecked, the validated lesson is run, and if successful is deemed an authentic CAI package. This evaluation is never really completed, as additions and revisions can be easily included in the existing lesson.

Gagne, Wager and Rojas (1981) have proposed a system for planning and authoring lessons in CAI. Although existing author languages follow the traditional programmed instruction of the branching type, Gagne et al. (1981) propose a more thoroughly planned text. This is designed in accordance with the type of learning outcome expected. When the outcome has been classified, the CAI designer is ready to proceed with a sequence of steps that "teach." These steps (Gagne, 1977) are called "events of instruction." The design of the CAI program is dependent on the nine steps.

Gagne, Wager and Rojas (1981) offer more guidance to the CAI author than just "utilize feedback principles" or "avoid placing too much text on the screen." They offer a complete set of guidelines, based on the events of instruc-
tion, to enable the author to design effective, high-quality instruction.

Simulations assist the learner to apply his/her knowledge. This is a problem-solving outcome, which requires the application of previously learned rules. The capability of problem-solving is developed in learners by providing them with practice in a variety of situations—preferably those which resemble the "real-life" or "job-like" problems they will encounter in the future (Gagne et al., 1981). The computer can accomplish this using a simulation exercise.

Simulations may be analyzed in terms of the events of instruction they contain. Also, they usually include a presentation of the objective and the presentation of a stimulus. A simulation usually has the purpose of teaching a learner to identify the relationships between components of a system, and how to control these relationships. After eliciting a response from the learner, the simulation provides feedback in the form of a new stimulus situation.

The authoring guidelines proposed by Gagne et al. (1981) are outlined below. Each is preceded by the appropriate event of instruction.

1. Gaining Attention--this can be done by raising the learner's curiosity, presenting a hypothetical question, or asking a rhetorical question.
2. Informing Learner of Lesson Objective—the author must state in simple terms what the student is to accomplish once he/she has learned.

3. Stimulating Recall of Prior Learning—it is necessary to have the learner recall any applicable rules. The learner will have to synthesize these rules himself/herself.

4. Presenting Stimuli With Distinctive Features—the stimulus, in the case of most problem-solving experiences, is information about an existing state of affairs. The learner is not given any direct learning guidance, unless he or she specifically requests it. Guidance may be given in the form of telling the learner of available options.

5. Guiding Learning and Eliciting Performance—the computer can be used to simulate responses to action choices made by the learner. The learner will input information, and the computer will present a changed stimulus display.

6. Providing Informative Feedback—feedback can be provided by changing the stimulus situation in response to the learner's action. It may be appropriate to give verbal feedback as well.
7. **Assessing Performance**—the goal is to provide the learner with a different situation calling for another synthesis of the applicable rules. This will judge his/her ability to generalize the new problem-solving skill.

8. **Enhancing Retention and Learning Transfer**—the purpose is to have the learner generate other strategies for solving similar problems using other rules.

These CAI simulation authoring guidelines and their usefulness in the development of a CAI simulation exercise are discussed later in this thesis.

**Summary**

This chapter reviews information on continuing nursing education and individualized learning. Research on CAI in the health sciences (specifically nursing education) and its effect on user performance and user attitude is discussed. Additional information on simulation exercises, CAI authoring languages and simulation authoring guidelines are discussed.

Computer assisted instruction is a new form of continuing education. The educator is a facilitator and resource person while the learner takes a more active role in the educative process. This raises questions regarding CAI's
effect on the learner.

Several researchers (Bitzer & Boudreaux, 1969; Kirchoff & Holzemer, 1979; Ronald, 1979) have noted that, after a proper introduction to CAI, there is an increased and even enthusiastic acceptance by the participants. The distracting effects of the computer hardware do not seem to decrease learning (Bitzer & Boudreaux, 1969). User satisfaction concerning the technical aspects of the terminal seems to increase (Hoffer, Methewson, Loughrey et al., 1975). When comparing cognitive learning, transfer of learning and affective behaviour, there seems little difference between CAI and conventional classroom methods (Bitzer & Boudreaux, 1969; Huckabay, Anderson, Holm & Lee, 1979). Whether these results are, in part, due to a Hawthorne Effect (Roethlisberger & Dickson, 1940) will be tested by future research projects.

The initial, although limited, work with CAI has identified it as a worthwhile addition to the more traditional forms of continuing education. As well as being used on its own, the computer can be used in conjunction with other instructional devices, such as learning modules.

The following chapter describes the research procedure used to evaluate the three hypotheses presented in Chapter One. Information is included on subject characteristics, the design of the instructional tools and measures, and a summary of the tests used in data analysis.
CHAPTER III

METHOD

This study evaluates the ability of a learning module and CAI simulation exercise to teach the administration of a mental status examination. Computer assisted instruction authoring guidelines (Gagne, Wager & Rojas, 1981) are evaluated to determine their utility in producing a quality simulation exercise.

A description of the subjects participating in this study is presented following this introduction. The development and pilot-testing of the instructional tools (learning module and CAI simulation exercise) are then discussed.

The measures used to evaluate learning are also described. These include: a) a test of mental status examination knowledge, (b) a test of mental status examination application skill, (c) a questionnaire of subjects' attitudes towards computers, computers in nursing and the CAI simulation exercise, and (d) a follow-up interview.

The research procedure chosen for this study is then outlined. Chapter Three concludes with a brief description of the data analysis used in this research.
Subjects

Approximately 65 registered nurses working at the University of British Columbia Health Sciences Centre Hospital-Psychiatric Unit were invited to be involved in this study. The hospital was chosen because one of its departments has a terminal link-up with the university's Michigan Terminal System.

Recruitment was initially slow, despite notices, letters and talks given at the ward level. The sample criteria were therefore broadened to include nursing support staff. These workers are part of the nursing department, have a different job description, are called psychiatric assistants and also conduct mental status examinations. They are male and usually have an undergraduate degree in one of the social sciences.

Following an initial "lull" period, a total of 22 participants volunteered for the research. All met the following criteria:

1. Currently registered as a nurse or working as a psychiatric assistant.
2. Currently working in psychiatry.
Instructional Tools

The learning module on mental status examination and the accompanying CAI simulation exercise were written by this author. A brief description of their development and pilot-testing is now presented.

Construction of a Learning Module

Once the topic "MENTAL STATUS EXAMINATION" was chosen for this project, the author searched for programmed instruction packages to present prior to the computer simulation. Only one was discovered, and this was not specific to postgraduate continuing education in nursing. Instead, this subject seems to be taught via lecture, and/or role-play. Learning seems to be either incidental or trial and error. An individualized learning module utilizing current research and knowledge was therefore developed to provide a systematic approach to learning how to conduct a mental status examination.

It is important to begin a project such as this with some identified guidelines. This author chose Hinthones' (1980) as the most useful to the task. These guidelines are described in the literature review.

Using the proposed learner's knowledge and skills, the
following goal and learner objectives were developed:

Upon completion of the learning module, the learner will be able to successfully complete a mental status examination. The learner will be able to:

1. Define mental status examination, incorporating its four main elements.
2. Name six sections assessed in a mental status exam.
3. List at least three items to be recorded in each section.

The learning module was designed on the basis of the above three objectives. According to Gagne (1977), they are a combination of two types of learning outcomes: (a) verbal information, and (b) intellectual skills. The learning events resulting from these outcomes have been incorporated into the module.

The module was divided into five components. These consisted of: (a) mental status examination definition, (b) six sections assessed in a mental status exam, (c) glossary of psychiatric terms, (d) instructions on the use of the CAI simulation exercise and (e) reference list. Study questions and answers were included to provide feedback regarding the attainment of the objectives. Pre and posttests also prod-
uced evidence of the subjects' increase in knowledge.

Directions in the use of the module were included. Certain parts of it were presented on coloured paper. This made the module easier to follow. The instructions on the use of the computer (located at the back of the module) used a different script. This also helped to direct the learners' attention.

The module was finally evaluated in terms of its appropriateness, effectiveness and practicality. Three "experts" with a background in mental status examination as well as education programming critiqued the final draft. Following their recommendations, certain revisions were made: (a) one section was totally rewritten, and (b) the glossary was reorganized to more closely follow the text.

The module was formally pilot-tested, with good results (posttest mean increase of 29%). No further revisions were deemed necessary. A copy of the learning module on mental status examination is available in Appendix A.

Construction of a CAI Lesson

A CAI simulation exercise was developed to meet the fourth objective of this project. It was stated as:

4. The learner will be able to write a mental status
examination summary (General Appearance & Behaviour and Speech sections only) including five items identified by this author.

The objective related to the utilization of a cognitive strategy by the potential learner. This involved a problem-solving approach. Not only must the learner apply previously learned rules, he/she must also learn something new. Eight steps were used in the development of a problem-solving computer simulation exercise:

1. In choosing the type of CAI lesson (drill and practice, testing, simulation exercise, etc.), the author determined the type of learning outcome related to objective four. This, more than anything else, determined the type of CAI to be used.

2. The author informally surveyed the knowledge level of the target audience. The simulation exercise was written to parallel their knowledge and skill in conducting a mental status examination.

3. Once the need, type of learning outcome, appropriate form of CAI and authoring language were identified, the author progressed to the instructional design. Objective-setting helped in selecting categories to include in the simulation. They were quite broad, however, as problem-solving goals are more abstract in nature. Since people
often change their original train of thought or action while problem-solving in real life, this characteristic was included in the simulation. This author was not evaluating if the learners could find the best solution to a problem, but whether they could utilize their previously learned rules regarding mental status examinations.

4. In the nurse-patient simulation, the author developed a menu of five possible options. To simplify frame-writing, each option was first drafted on paper and colour-coded. All but one of these options could solve the problem, however the remaining four differed in their appropriateness. This was dependent on the choices made by the user throughout the program. The author found this a good way to begin frame writing as each option began a different problem frame. As events progressed, the user had a choice of continuing or changing tactics. Each change initiated a subroutine or branch. In the initial design, wrong and unanticipated answers were not included. A frame could thus be easily designed from beginning to end.

5. As the user progressed through his/her chosen option, the simulation patient responded in various ways. As always, these behaviours were kept as life-like as possible. The consequences of certain user choices were real—such as the patients' elopement from the hospital. This was an important key to maintaining attention and motivation in the
CAI student.

6. As wrong and unanticipated user responses were included, branches began to develop in the CAI design. The author kept these branches short, and completed one at a time.

7. As frame sequences were developed, bugs were identified and eliminated. This seemed easier to do in the design stage than waiting until completion of the entire simulation. When testing for bugs, the program halts at the source of error to identify its source. This was far better than programming the entire lesson only to find that the same mistake had been made throughout.

8. When completed, the final product was informally pilot-tested by two registered nurses working in psychiatry. Both were able to successfully complete the exercise. On their suggestion, the computer instructions (located in the learning module) were rewritten to meet the needs of a person with no experience of computers or a terminal keyboard. Punctuation and layout within the simulation exercise was also modified. A copy of the CAI simulation exercise on mental status examination is available in Appendix B.

Measures

The author developed five measures for data collection.
They are outlined below.

Survey of Subject Characteristics

This measure was devised to provide subject characteristics. General information questions included age, sex and educational background. Other more specific questions centered on the subjects' background experience with a mental status examination and familiarity with a typewriter and/or computer keyboard. A copy of this survey is available in Appendix C.

Test of Mental Status Examination Knowledge

A 40 item test was devised to provide a baseline of the subjects' mental status examination knowledge before and after the learning module. All questions were taken directly from the learning module (some verbatim). The questions included: (a) 12 short answer, (b) 5 multiple choice, (c) 9 true or false, and (d) 14 matching items. Subjects could score a possible 48 points. This test was distributed before and after the learning module—pilot-testing produced good results and no changes in test design or content were necessary. A copy is available in Appendix D. An answer guide is located in Appendix E.
CAI Questionnaire

A questionnaire was designed to assess the subjects' attitudes towards: (a) computers, (b) CAI in nursing, and (c) the CAI simulation program in mental status examination.

The questionnaire administered prior to the computer simulation contained 11 items referring to computers and CAI in nursing (see Appendix F). The post-CAI questionnaire contained 17 items—these six additional items focused on the CAI simulation exercise (see Appendix G). Responses to statements were made on a Likert scale. The order of the positive and negative statements was different on the pre and post-questionnaire to avoid response set.

Test of Mental Status Examination Application Skill

Three paper and pencil tests were devised to assess the degree of learning before and after the CAI simulation exercise. They focused on the learners' ability to apply new knowledge in a problem-solving situation, a skill focused on in the CAI simulation exercise.

Only the first two sections of a mental status examina-
tion were included (1. General Appearance & Behaviour and 2. Speech). This was due to the time involved in writing the CAI simulation exercise as well as time restrictions on the thesis.

Two paper and pencil tests required the subject to list appropriate observations under the correctly identified mental status examination section. Errors were recorded if the observations were listed incorrectly, or if irrelevant information was included. In the third test, the learner was asked to compose a short and concise summary of the information identified in test two. Subjects were cautioned to only include information they saw as necessary to their summary.

Subjects could attain a possible score of 25 on test one and 29 marks on test two. Test two-summary was worth five marks. A copy of the Test of Mental Status Examination Application Skill is presented in Appendix H, while an answer guide is available in Appendix I.

Follow-up Interview

An effort was made by the author to gather some subjective data on the response to the research study. Upon completion of the CAI program, subjects were asked to describe the most and least useful aspects of the exper-
ience. Other questions regarding the applicability of the new information to their work setting were included. A copy of the interview questions is available in Appendix J.

**Research Design**

Evaluation research was chosen as most applicable to this study. Weiss (1972) describes the purpose of evaluation research as to "measure the effects of a program against the goals it set out to accomplish as a means of contributing to subsequent decision making about the program and improving further programming" (p. 4). In this study, the learning module and CAI simulation exercise were evaluated on their ability to assist the learner to meet the previously defined goal and objectives. A one group, three test design was used. A control group was not included as it would have been difficult to obtain. The time interval between the beginning and end of the project was kept as short as possible so as to reduce the likelihood of posttest data being influenced by extraneous variables (see Figure 1).

**Research Procedure**

The study began with a pretest. This test measured the subjects' current mental status examination knowledge.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Distribution Date</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey of Subject Characteristics</td>
<td>April 1984</td>
<td>April 1984</td>
</tr>
<tr>
<td>Pretest of Mental Status Examination Knowledge</td>
<td>April 1984</td>
<td>April 1984</td>
</tr>
<tr>
<td><strong>LEARNING MODULE ON MENTAL STATUS EXAMINATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-CAI Questionnaire</td>
<td>May 1984</td>
<td>June 1984</td>
</tr>
<tr>
<td>Posttest 1 of Mental Status Examination Knowledge</td>
<td>May 1984</td>
<td>June 1984</td>
</tr>
<tr>
<td>Posttest 1 of Mental Status Application Skill</td>
<td>May 1984</td>
<td>June 1984</td>
</tr>
<tr>
<td><strong>COMPUTER ASSISTED INSTRUCTION SIMULATION EXERCISE</strong></td>
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</tr>
<tr>
<td>Post-CAI Questionnaire</td>
<td>May 1984</td>
<td>July 1984</td>
</tr>
<tr>
<td>Posttest 2 of Mental Status Application Skill</td>
<td>May 1984</td>
<td>July 1984</td>
</tr>
<tr>
<td>Follow-up Interview</td>
<td>May 1984</td>
<td>July 1984</td>
</tr>
</tbody>
</table>

**Figure 1.** Distribution and completion dates of measures used in data collection. (Instructional tools are inserted in capitals; CAI = computer assisted instruction).
Descriptive data on subject characteristics were also obtained.

Following a pretest, all subjects engaged in individualized learning via a learning module on mental status examination. Upon completion of this, posttest 1 was completed and handed in. Posttest 1 consisted of three parts:

1. A posttest of mental status examination knowledge.
3. A pretest of mental status examination application skill. This consisted of three paper and pencil tests. The third test required the learner to decide which information needed to be included in a written summary statement.

Upon completion of posttest 1, each subject engaged in a CAI lesson consisting of a nurse-patient simulation exercise. The user was required to apply the information found in the learning module to this simulation exercise. This included making a decision as to which examination items needed to be assessed, as well as deciding what information was most important to include in a summary statement.

Posttest 2 was given to the subjects after the CAI experience. This consisted of two parts. One was a post-CAI
questionnaire of attitudes towards computers, CAI in nursing and the CAI simulation exercise. This was administered directly following the computer experience. A posttest of mental status application skill was also included in posttest 2.

A follow-up interview was conducted following the CAI experience. Figure 2 summarizes the research procedure.

**Data Analysis**

The pre and posttest mental status examination knowledge and application scores were analyzed using both descriptive statistics (mean, mode, median, range, standard deviation, frequency) and inferential statistics (t-tests).

The results of the pre and post-CAI questionnaire were tabulated and expressed via frequency and mean values.

Although the sample size was small, an attempt was made to determine if there was a relationship between the amount of time taken to complete the CIA simulation exercise and familiarity with a typewriter and/or computer terminal keyboard.

**Summary**

In summary, subjects were identified as registered
Figure 2. Flowchart of evaluation procedure with data collection points identified. (CAI = computer assisted instruction).
nurses and psychiatric assistants working at Health Sciences Centre Hospital-Psychiatric Unit. The development and pilot-testing of the learning module on mental status examination and the CAI simulation exercise are described.

Five measures used in data collection are outlined:
1. Survey of subject characteristics.
2. Test of mental status examination knowledge.
3. Test of mental status examination application skill.
4. Questionnaire of subjects' attitudes towards computers, computers in nursing and the CAI simulation exercise.
5. Follow-up interview.

Evaluation research was chosen to test the three hypotheses—using a one group, three test design. The research procedure was also outlined—from pretest to follow-up interview. This chapter concluded with a brief explanation of how the results were analyzed.

Chapter Four presents the results obtained during the data collection stage of this research project. These results are grouped with their appropriate research hypothesis. Subjects' response rate and characteristics are also presented.
CHAPTER IV

RESULTS

This chapter presents the research results based on a summary and analysis of data collected using the five measures described in Chapter Three. The subjects' response rate and relevant characteristics are presented first, followed by the findings associated with three previously identified hypotheses:

1. The participants in the study could acquire the knowledge necessary to administer a mental status examination.

2. The participants in the study could apply their mental status examination knowledge to a CAI nurse-patient simulation exercise.

3. The guidelines for CAI authors used in this study (Gagne, Wager & Rojas, 1981) are helpful in the development of a quality CAI simulation exercise.

In addition, two relationships not previously postulated are presented as relevant to this study.

Response Rate

Of the 22 subjects, 11 completed the research project.
This is a 50% response rate. There are several factors responsible for this low percentage. Some subjects cited unexpected surgery, starting a new job, involvement in marriage plans and vacation as their reasons for withdrawal from this study. Other reasons were less specific. One cited the learning module as being "too hard" while several others just "couldn't seem to get around to it." A lack of free time was the most common explanation. Although Health Sciences Centre Hospital had agreed to the project being done on hospital time, few nurses could fit this type of continuing education into their work schedule. Most of those who completed the research did so on their own time. Two other subjects withdrew from the study when the computer system was unavailable for a three week period.

Subject Characteristics

A survey of subject characteristics (see Appendix C) gathered demographic (i.e., sex, age and education) and descriptive data. Results are presented in Table 1.

Descriptive data were obtained to provide information on the subjects' familiarity and experience in conducting a mental status examination. Since this was the learners' goal in the research study, the author needed to determine their exposure to this psychiatric skill.


**TABLE 1**

Results of Survey of Subject Characteristics Administered to Subjects from Health Sciences Centre Hospital-Psychiatric Unit

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No.</th>
<th>%</th>
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</thead>
<tbody>
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<td></td>
</tr>
<tr>
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<td>10</td>
</tr>
<tr>
<td>1965-69</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>1970-74</td>
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</tr>
<tr>
<td>1980-84</td>
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<td>10</td>
</tr>
<tr>
<td>N/A</td>
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<td>10</td>
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<tr>
<td>Female</td>
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<td>R.N.</td>
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<td>M.S.N.</td>
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<tr>
<td>Other</td>
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<td>25-29</td>
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<tr>
<td>30-34</td>
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<td>1</td>
<td>9.1</td>
</tr>
<tr>
<td>≥ 50</td>
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## TABLE 1 (con't)

Results of Survey of Subject Characteristics Administered to Subjects from Health Sciences Centre Hospital-Psychiatric Unit

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No.</th>
<th>%</th>
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<tr>
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<tr>
<td>1</td>
<td>0</td>
<td>-</td>
</tr>
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<td>2</td>
<td>2</td>
<td>18.2</td>
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<tr>
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<td>1</td>
<td>9.1</td>
</tr>
<tr>
<td>&gt; 3</td>
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<td>Those who have been asked to conduct a mental status examination:</td>
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<tr>
<td>No</td>
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<td>54.5</td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>45.5</td>
</tr>
<tr>
<td>Mental status examination was learned:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Nursing training</td>
<td>3</td>
<td>27.3</td>
</tr>
<tr>
<td>On the job</td>
<td>5</td>
<td>45.5</td>
</tr>
<tr>
<td>Prior workshop</td>
<td>3</td>
<td>27.3</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Formal continuing education courses in nursing:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>81.8</td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>Typewriter/computer Keyboard familiarity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not familiar</td>
<td>3</td>
<td>27.3</td>
</tr>
<tr>
<td>Fairly familiar</td>
<td>5</td>
<td>45.5</td>
</tr>
<tr>
<td>Familiar</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>Very familiar</td>
<td>1</td>
<td>9.1</td>
</tr>
<tr>
<td>Know it well</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Previous computer experience:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>54.5</td>
</tr>
<tr>
<td>Yes</td>
<td>5</td>
<td>45.5</td>
</tr>
</tbody>
</table>

Note: Sample size = 11.

*a* This subject was a psychiatric assistant.
Additional descriptive data were gathered regarding the subjects' familiarity with a typewriter and/or computer keyboard. Previous computer experience was also assessed. This information determined the subjects' exposure to computer technology as well as their ability to interact with the CAI simulation exercise.

**Tests of Hypotheses**

Three hypotheses were examined in this research study. Two focused on the ability of a learning module and CAI simulation exercise to provide the subjects with the knowledge and skill necessary to conduct a mental status examination.

A third hypothesis assessed the helpfulness of a set of CAI authoring guidelines (Gagne, Wager & Rojas, 1981) in the development of a quality simulation exercise.

The level of significance was set at 0.01.

Two data collection measures were used to verify hypotheses one and two: (a) the test of mental status examination knowledge, and (b) the test of mental status examination application skill. For purposes of clarity within this chapter, the results of these two tests are further explained:

1. The test of mental status examination knowledge was
administered in the pretest and posttest 1 (see Figure 2). These results are referred to as pre-learning module scores and post-learning module scores.

2. The test of mental status examination application skill was administered in posttest 1 and posttest 2 (see Figure 2). These results are referred to as pre-CAI scores and post-CAI scores.

Hypothesis One

Hypothesis 1 stated: Participants in the study could acquire the knowledge necessary to administer a mental status examination.

This hypothesis was evaluated by means of a test of mental status examination knowledge (see Appendix D). Figure 3 illustrates the relationship of this test to the learning module.

Figure 3. Flowchart identifying pre and posttest of mental status examination knowledge. (CAI = computer assisted instruction).
Significant improvement was noted in post-learning module scores ($t=8.98$, $df=10$, $p<.01$). The subjects' pre-learning module mean percentage was 62%, while this rose to 92% on the posttest—an increase of 30% (see Table 2).

**Hypothesis Two**

Hypothesis 2 stated: **Participants in the study could apply their mental status examination knowledge to a CAI nurse-patient simulation exercise.**

This hypothesis was evaluated by means of a test of mental status examination application skill (see Appendix H). Figure 4 illustrates the relationship of this test to the CAI simulation exercise.

---

**POSTTEST 1**
1. Posttest of mental status examination knowledge
2. Pre-CAI questionnaire of attitudes towards computers and CAI in nursing
3. Pretest of mental status examination application skill.

**POSTTEST 2**
1. Post-CAI questionnaire of attitudes towards computers, CAI in nursing, and the CAI simulation exercise
2. Posttest of mental status examination application skill

---

Figure 4. Flowchart identifying pre and posttest of mental status examination application skill. (CAI = computer assisted instruction).
### TABLE 2

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Knowledge Pre- learning module</th>
<th>Knowledge Post-learning module</th>
<th>Application Pre-CAI</th>
<th>Application Post-CAI</th>
<th>CAI*</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>28 (58)**</td>
<td>48 (100)</td>
<td>81</td>
<td>87</td>
<td>21 (75)</td>
</tr>
<tr>
<td>02</td>
<td>23 (48)</td>
<td>46 (96)</td>
<td>50</td>
<td>88</td>
<td>23 (82)</td>
</tr>
<tr>
<td>03</td>
<td>22 (46)</td>
<td>44 (92)</td>
<td>27</td>
<td>46</td>
<td>21 (75)</td>
</tr>
<tr>
<td>04</td>
<td>40 (83)</td>
<td>47 (98)</td>
<td>76</td>
<td>83</td>
<td>18 (64)</td>
</tr>
<tr>
<td>06</td>
<td>32 (67)</td>
<td>46 (96)</td>
<td>83</td>
<td>97</td>
<td>20 (71)</td>
</tr>
<tr>
<td>07</td>
<td>33 (69)</td>
<td>47 (98)</td>
<td>69</td>
<td>95</td>
<td>21 (75)</td>
</tr>
<tr>
<td>08</td>
<td>25 (52)</td>
<td>42 (88)</td>
<td>46</td>
<td>65</td>
<td>25 (89)</td>
</tr>
<tr>
<td>12</td>
<td>29 (60)</td>
<td>45 (94)</td>
<td>66</td>
<td>79</td>
<td>26 (92)</td>
</tr>
<tr>
<td>16</td>
<td>30 (63)</td>
<td>39 (81)</td>
<td>50</td>
<td>68</td>
<td>26 (92)</td>
</tr>
<tr>
<td>17</td>
<td>31 (65)</td>
<td>40 (83)</td>
<td>29</td>
<td>51</td>
<td>24 (86)</td>
</tr>
<tr>
<td>22</td>
<td>31 (65)</td>
<td>42 (88)</td>
<td>27</td>
<td>42</td>
<td>24 (86)</td>
</tr>
</tbody>
</table>

Note. Maximum knowledge score = 48. Maximum application score = 100. Maximum CAI score = 28.

* CAI = computer assisted instruction. These scores were calculated by subtracting subjects' wrong answers from total possible wrong answers (28) on CAI lesson.

** Numbers in parentheses indicate percentage.
The test of mental status examination application skill consisted of three parts:

1. Test one--this test evaluated the subjects' ability to identify mental status examination items and observations. The subject could attain a score of 25 points.

2. Test two--this test also evaluated the subjects' ability to identify mental status examination items as well as match these with the correct observation. This feature was not included in test one. The subject could achieve a possible 29 points.

3. Test two-summary--using the items and observations identified in test two, subjects were required to write a mental status examination summary of the important data. This was worth five points.

Since their maximum scores vary, each test has been given a certain weight to assist in the comparison of the three sets of data. Test one and two are allotted 50% (25% each) of the total score on the test of mental status examination application skill. Test two-summary is assigned the remaining 50% as it is the actual skill that the nurse must be able to perform.

A significant improvement in post-CAI scores was obtained on the test of mental status examination application skill ($t=6.65$, df=10, $p<.01$). The subjects' pre-CAI mean percentage was 55%--this increased to 73% on the posttest (see Table 2).
<table>
<thead>
<tr>
<th>Subject Code</th>
<th>1. Test one Pre&lt;sup&gt;a&lt;/sup&gt; Post&lt;sup&gt;b&lt;/sup&gt; (x/25)&lt;sup&gt;c&lt;/sup&gt;</th>
<th>2. Test two Pre&lt;sup&gt;a&lt;/sup&gt; Post&lt;sup&gt;b&lt;/sup&gt; (x/25)&lt;sup&gt;c&lt;/sup&gt;</th>
<th>3. Test two-summary Pre&lt;sup&gt;a&lt;/sup&gt; Post&lt;sup&gt;b&lt;/sup&gt; (x/25)&lt;sup&gt;c&lt;/sup&gt;</th>
<th>3. Test two-summary Pre&lt;sup&gt;a&lt;/sup&gt; Post&lt;sup&gt;b&lt;/sup&gt; (x/50)&lt;sup&gt;c&lt;/sup&gt;</th>
<th>3. Test two-summary Pre&lt;sup&gt;a&lt;/sup&gt; Post&lt;sup&gt;b&lt;/sup&gt; (x/50)&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>17 (17) 20 (20)</td>
<td>16 (14) 20 (17)</td>
<td>5 (50)</td>
<td>5 (50)</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>15 (15) 17 (17)</td>
<td>17 (15) 24 (21)</td>
<td>2 (20)</td>
<td>5 (50)</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>10 (10) 13 (13)</td>
<td>8 (7 ) 15 (13)</td>
<td>1 (10)</td>
<td>2 (20)</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>15 (15) 13 (13)</td>
<td>24 (21) 23 (20)</td>
<td>4 (40)</td>
<td>5 (50)</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>21 (21) 23 (23)</td>
<td>26 (22) 28 (24)</td>
<td>4 (40)</td>
<td>5 (50)</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>18 (18) 21 (21)</td>
<td>24 (21) 28 (24)</td>
<td>3 (30)</td>
<td>5 (50)</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>17 (17) 11 (11)</td>
<td>11 (9 ) 16 (14)</td>
<td>2 (20)</td>
<td>4 (40)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>14 (14) 15 (15)</td>
<td>26 (22) 28 (24)</td>
<td>3 (30)</td>
<td>4 (40)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>15 (15) 12 (12)</td>
<td>17 (15) 18 (16)</td>
<td>2 (20)</td>
<td>4 (40)</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>5 (5 ) 13 (13)</td>
<td>16 (14) 21 (18)</td>
<td>1 (10)</td>
<td>2 (20)</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>8 (8 ) 11 (11)</td>
<td>11 (9 ) 13 (11)</td>
<td>1 (10)</td>
<td>2 (20)</td>
<td></td>
</tr>
<tr>
<td>Raw X&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Raw X&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Raw X&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Raw X&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Raw X&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Raw X&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>14.1 (14.1)</td>
<td>15.3 (15.3)</td>
<td>17.8 (15.4)</td>
<td>21.3 (18.4)</td>
<td>2.5 (25)</td>
<td>3.9 (39)</td>
</tr>
</tbody>
</table>

Note. Maximum score on test one = 25. Maximum score on test two = 29. Maximum score on test two summary = 5. CAI = computer assisted instruction. Compiled scores total = 100

<sup>a</sup> Pre = Pre-CAI score.

<sup>b</sup> Post = Post-CAI score.

<sup>c</sup> Composite scores are shown in parentheses.
The three tests previously described are examined separately to determine the significance of their findings. Table 3 presents pre and post-CAI scores for each test.

1. **Test one.** The results of this test did not prove significant at the 1% level \((t=1.13, \ df=10, \ p=\text{ns})\). The pre-CAI score mean percentage was 56%, but the post-CAI mean percentage only rose to 61%.

2. **Test two.** The results of this test did prove statistically significant \((t=4.64, \ df=10, \ p<.01)\). The pre-CAI score mean percentage was 62%, with a posttest mean of 73%.

3. **Test two-summary.** Values obtained for the mental status examination summary statement proved significant \((t=5.59, \ df=10, \ p<.01)\). The pre-CAI score mean percentage was 51%—this rose to 78% following the CAI simulation exercise.

Completion scores on the CAI simulation exercise (see Table 2) ranged from 18 to 26 (maximum score=28), with a mean score of 23 (81%). Despite the statistical significance of the post-CAI scores on test two-summary, no significant correlation could be found between these and the CAI simulation exercise scores (see Table 4).
### TABLE 4

Comparison of Pre and Post-CAI Scores on Test Two-Summary and CAI Simulation Exercise Scores

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pre-CAI</th>
<th>CAI*</th>
<th>Post-CAI</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>5</td>
<td>21</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>02</td>
<td>2</td>
<td>23</td>
<td>5</td>
<td>60</td>
</tr>
<tr>
<td>03</td>
<td>1</td>
<td>21</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>04</td>
<td>4</td>
<td>18</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>06</td>
<td>4</td>
<td>20</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>07</td>
<td>3</td>
<td>21</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>08</td>
<td>2</td>
<td>25</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>12</td>
<td>3</td>
<td>26</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>16</td>
<td>2</td>
<td>26</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>24</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>22</td>
<td>1</td>
<td>24</td>
<td>2</td>
<td>20</td>
</tr>
</tbody>
</table>


* These scores were calculated by subtracting subjects' wrong answers from total possible wrong answers (28) on CAI lesson.
Hypothesis Three

Hypothesis 3 stated: The guidelines for CAI authors used in this study (Gagne, Wager & Rojas, 1981) are helpful in the development of a quality CAI simulation exercise.

This hypothesis was evaluated by means of a pre and post-CAI attitude questionnaire and follow-up interview.

The pre and post-CAI questionnaire results are divided into three tables. Each table focuses on the mean scores of the subjects' attitudes towards: (a) computers (See Table 5), (b) CAI in nursing (see Table 6), and (c) the CAI simulation exercise on mental status examination (see Table 7). Appendix K contains information on the frequency of responses to the pre and post-CAI questionnaire.

An informal interview to gather subjective responses was conducted with all subjects who completed the study. A copy of the interview questions is available in Appendix J, while a summary of responses is presented in Appendix L.

Ten of the subjects chose the learning module as the "most useful" part of the experience. Four subjects found the CAI program as "least useful." However, everyone agreed that the knowledge gained in the research study was applicable to their work, and stated they felt more comfortable in conducting a mental status examination. Reasons
## TABLE 5

Mean Scores on Pre and Post-CAI Questionnaire of Subjects' Attitudes Towards Computers

<table>
<thead>
<tr>
<th>Statement</th>
<th>Pre-CAI Mean</th>
<th>Post-CAI Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel comfortable in sitting down to a computer terminal</td>
<td>3.3</td>
<td>2.7</td>
</tr>
<tr>
<td>Sitting down to a computer terminal makes me anxious</td>
<td>2.5</td>
<td>2.9</td>
</tr>
<tr>
<td>It is easy to learn how to operate a computer</td>
<td>3.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Dealing with a computer is dehumanizing</td>
<td>3.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Computers create more problems than they solve</td>
<td>3.7</td>
<td>4.1</td>
</tr>
<tr>
<td>I support the use of computers in nursing</td>
<td>2.3</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Note. Sample size = 11. CAI = computer assisted instruction.

a Mean score < 3 = Agree; Mean score of 3 = Neutral; Mean Score > 3 = Disagree.
### TABLE 6

Mean Scores on Pre and Post-CAI Questionnaire of Subjects' Attitudes Towards CAI in Nursing

<table>
<thead>
<tr>
<th>Statement</th>
<th>Pre-CAI Mean</th>
<th>Post-CAI Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatric nursing skills can be practiced on a computer</td>
<td>2.09</td>
<td>2.09</td>
</tr>
<tr>
<td>The computer should be incorporated as a teaching tool in schools of nursing</td>
<td>2.27</td>
<td>2.18</td>
</tr>
<tr>
<td>Computer assisted instruction will be an important part of my continuing education in nursing</td>
<td>2.63</td>
<td>2.63</td>
</tr>
<tr>
<td>I would consider taking a nursing course taught via a computer and self-instructional learning module</td>
<td></td>
<td>2.54</td>
</tr>
</tbody>
</table>

Note. Sample size = 11. CAI = computer assisted instruction. The statement with only post-CAI mean was not included on pre-CAI questionnaire.

a Mean score < 3 = Agree; Mean score of 3 = Neutral; Mean Score > 3 = Disagree
# TABLE 7

Mean Scores on Pre and Post-CAI Questionnaire of Subjects' Attitudes Towards the CAI Simulation Exercise

<table>
<thead>
<tr>
<th>Statement</th>
<th>Pre-CAI Mean*</th>
<th>Post-CAI Mean*</th>
</tr>
</thead>
<tbody>
<tr>
<td>To practice a mental status examination, I would prefer role-playing with other people than a computer assisted instruction program</td>
<td>3.09</td>
<td>3.18</td>
</tr>
<tr>
<td>I do not think that using a computer is the best way to practice a mental status examination</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>I think learning via a computer nurse-patient simulation simulation is more difficult than learning via a role-play situation</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>My likes for this computer assisted instruction program outweigh my dislikes</td>
<td>2.27</td>
<td></td>
</tr>
<tr>
<td>This computer program is not worth the time and effort it requires</td>
<td>4.27</td>
<td></td>
</tr>
<tr>
<td>Practicing a mental status examination on a computer is not very life-like</td>
<td>3.18</td>
<td></td>
</tr>
<tr>
<td>This computer assisted instruction program offers helpful and informative feedback</td>
<td>1.9</td>
<td></td>
</tr>
</tbody>
</table>

Note. Sample size = 11. CAI = computer assisted instruction. The statement with only post-CAI mean was not included on pre-CAI questionnaire.

*Mean score < 3 = Agree; Mean score of 3 = Neutral; Mean Score > 3 = Disagree
included that the information was a good review, the experience helped them to be more organized, and they now had a better understanding of what a mental status examination entailed.

Additional comments about the study were solicited. The CAI exercise was described as "fun", but some felt the experience needed to be more subjective and interactive. Several people mentioned their anxiety as interfering with the learning experience. While CAI was seen as useful, several subjects felt the traditional methods of practising a mental status exam (such as role-playing and patient interviews) were "better."

Observations by the Author

During the data collection stage, additional information, irrespective of the hypotheses, were observed by the author:

1. Two subjects were shaking as they began their CAI experience. In one case, a learner had to be "signed off" the computer and given time to relax before resuming the simulation exercise.

2. Many of the subjects expressed a fear of "breaking" the computer or "making a mistake" in their responses to the exercise. Every subject made a point of asking if the author
was going to stay with him/her during the CAI exercise.

3. Anxiety seemed to result from doing three tasks simultaneously: (a) a simulation exercise, (b) learning to type, and (c) interacting with the computer. These feelings were verified during the follow-up interview.

4. Familiarity with a typewriter or computer keyboard decreased the time taken to complete the CAI exercise. Subjects completed the CAI simulation in an average of 32 minutes. Subjects with no previous knowledge of a typewriter or terminal keyboard averaged 37 minutes—while one subject who was very familiar with the keyboard averaged 26 minutes. This data is available in Appendix M.

5. Previous computer experience also played a role in reducing CAI completion time (see Table 8). Those with no previous experience averaged 34 minutes, while subjects with prior experience averaged 29 minutes.

6. Subjects would frequently voice their thoughts during the CAI exercise. When reaching a decision on how to proceed in the simulation, some would thank the author for assistance, when no help had been given whatsoever!

7. Most subjects completed this project outside of their work day. Many stated that there was just not enough time to participate in continuing education while on duty.
### Table 8

Comparison of Subjects' Previous Computer Experience with Range and Mean Completion Times of CAI Simulation Exercise

<table>
<thead>
<tr>
<th>Previous Computer Experience</th>
<th>Range</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>24-48</td>
<td>34</td>
</tr>
<tr>
<td>Yes</td>
<td>18-34</td>
<td>29</td>
</tr>
</tbody>
</table>

Note. Sample size = 11. CAI = computer assisted instruction. Range and mean times are in minutes.
Summary

Results of the data analysis were presented in this chapter. The study sample consisted of 11 subjects. Of these, 10 were registered nurses and one was a psychiatric assistant. Since there was no difference in their ability to learn the skill of mental status examination, these two groups were not separated in the analysis.

The results obtained from the data collection measures can be summarized as follows:

1. The differences in scores on the pre and posttest of mental status examination knowledge were statistically significant.

2. The differences in scores on the pre and posttest of mental status examination application skill were statistically significant.

   a. There was no significant difference between pretest and posttest scores on test one.

   b. The difference between pretest and posttest scores on test two were significant.

   c. The difference between pre and post-test scores on test two-summary were significant.
3. Subjects who were familiar with a typewriter and/or computer keyboard took less time to complete the CAI simulation exercise.

4. Those subjects with previous computer experience completed the CAI simulation in less than the average time of 32 minutes.

The three hypotheses were supported by the results. In addition, valuable information about the use of CAI simulation exercises in continuing nursing education was gained from the study. These are discussed in the next chapter.
CHAPTER V

DISCUSSION AND CONCLUSIONS

This study critically evaluated a CAI simulation exercise developed according to guidelines for CAI authors proposed by Gagne, Wager and Rojas (1981). The simulation supplemented an individualized learning module on mental status examination.

Limitations of the study are presented following a discussion of research results. Implications for future research in CAI and continuing nursing education are also discussed. Conclusions drawn from this research project are presented at the end of the chapter.

Discussion of Results

Results showed that the subjects' knowledge of mental status examination significantly improved following the learning module. Their ability to apply this knowledge also improved following their CAI experience. Since the CAI simulation exercise was developed in accordance with the guidelines proposed by Gagne, Wager and Rojas (1981) and since the evidence suggests that the CAI simulation exercise produced significant gains in learning, it can reasonably be
concluded that these guidelines were helpful in the development of this CAI simulation exercise. This does not mean, however, that these guidelines are helpful to all CAI authors for all CAI simulation exercises. They were simply helpful to this author in the development of this simulation used in this research project.

The three research hypotheses are discussed separately in terms of the results presented in Chapter Four.

**Hypothesis One**

This research study supported Hypothesis 1—participants acquired the knowledge necessary to administer a mental status examination. The present results indicate the learning module is a viable tool with which to impart mental status examination knowledge.

One characteristic responsible for the learning modules' success was its self-pacing quality. Subjects mentioned this ability to progress at their own rate as an important feature for the working nurse.

While some subjects complained about the difficulty of the pre and posttest, most mentioned the helpfulness of the study questions interspersed throughout the module. Answers were provided so they could immediately check their response—a feature learners found useful.
When informed of their test results, subjects expressed pleasure and surprise at their dramatic increase in post-test scores. Many commented on how much mental status examination knowledge they had forgotten, or had never learned. In the follow-up interview, ten subjects identified the learning module as the most useful aspect of the study.

A factor which may have influenced the research results was the attention focussed on the subjects. The learning module was developed especially for nursing staff at Health Sciences Centre Hospital. The subjects were aware of this. All expressed pleasure in the development of an instructional tool utilizing their nursing knowledge and experience. Hospital in-service education material is often borrowed from schools of nursing or medicine and must be adapted to continuing nursing education.

Simply being involved in a research study might also have helped to produce the dramatic results. Several nurses wondered why they had never been involved in any prior studies—considering the hospital had a teaching and research function. Throughout the data collection stage, they regularly received mail (such as tests, forms and answers to their questions), were granted time off from their work duties (although few took advantage of this) and were questioned by other interested hospital personnel. All of this attention constituted a change in their work
routine.

The learning modules' effectiveness impressed the nursing administration—it is currently included in the hospital's orientation program for new nursing staff. Nurses not involved in the study have also asked for copies of the module.

**Hypothesis Two**

Hypothesis 2 was supported by the research results—participants were able to apply their mental status examination knowledge to a CAI simulation exercise. Results from one test included in a paper and pencil test of mental status examination application skill, however, did not prove statistically significant.

Several factors may be responsible for the nonsignificant results on test one. Of the 11 subjects, only five had ever conducted a mental status examination. For the majority, the listing of mental status examination sections, items and observations was a new (and as yet unlearned) skill. Although an example was provided as a guide, subjects had difficulty identifying and matching mental status examination items with the appropriate observation. During the second test, subjects were able to utilize their previous experience from test one to improve their problem-solving ability.
Anxiety resulting from having to apply their new knowledge may also have influenced the subjects' ability to successfully complete test one. With experience this could have decreased, enabling the subjects to concentrate on the task at hand.

The test of mental status examination application skill was never formally pilot-tested. Flaws may have existed in test one which affected the subjects' ability to distinguish and identify the relevant information.

The subjects' ability to apply their knowledge improved on the remainder of the test of mental status examination application skill (which closely resembled the style and presentation of the CAI simulation exercise). The latter provided knowledge and experience in the formulation of a mental status examination summary statement—a skill superficially presented in the learning module. Subjects were able to include this additional knowledge in their responses on the posttest of mental status examination application skill.

Previous research (Valish & Boyd, 1975) found that CAI could verify, but not augment, existing clinical knowledge. In another study (Huckabay, Anderson, Holm & Lee, 1979), no significant differences could be found between control and experimental groups in cognitive learning and transfer of learning. In this study, subjects were able to apply their
knowledge to a CAI simulation exercise. However, a non-significant correlation was found between scores on the CAI simulation exercise and the subjects' ability to formulate a mental status examination summary statement. Several factors could be responsible for this finding.

Subjects' anxiety regarding the computer experience may have interfered with their ability to respond to the CAI simulation. This anxiety factor is discussed later in the chapter.

The skill of mental status examination may have been discussed among the subjects, or with experienced professionals. Attention may have been focused on summaries recorded in patients' charts. The subjects may even have practiced their new skill.

**Hypothesis Three**

Hypothesis three was also supported by the research results—guidelines for CAI authors in this study (Gagne, Wager & Rojas, 1981) were helpful in the development of a quality CAI simulation exercise. The instructional events (Gagne, 1977) on which these guidelines were based are presented. These are followed by a description of how each guideline was incorporated into the CAI simulation exercise.
Gaining attention. The simulation lines "Welcome to the mental status examination simulation exercise" and "What is your name?" gained the learners' attention. Other techniques included capitalizing important information and separating the text into sections, each section dealing with only one or two points of information.

The computer simulation itself stimulated the learners' curiosity (thus gaining their attention), but it also seemed to interfere with the task at hand. Bitzer and Boudreaux (1969) found that the majority of respondents did not find their concentration hindered by the technology of computer terminals. This author observed that the majority of the subjects watched the keyboard so closely they would forget to look at the monitor. Concern was expressed over doing "something wrong." All subjects requested the author remain during the exercise "just in case." Some became confused with the computer instructions (see Appendix A) and so would seek reassurance that they were not doing something wrong. Several expressed anxiety at having to do three things at the same time: (a) learn to type, (b) interact with the computer, and (c) apply the mental status examination knowledge.

Several factors could be responsible for the subjects' anxiety. Over 50% of the subjects had never used a computer and so were unsure about this "high-tech" machine. Most
subjects were also unfamiliar with the computer keyboard. At least two participants stated they were afraid to touch a "wrong" key because they would destroy the lesson. Those who could not type often sat staring at the keyboard trying to find the correct key. The fact that those subjects with previous computer knowledge and experience completed the exercise in less than average time is an indicator of how important these factors are.

The author's presence could also have been a variable during the CAI exercise (although several subjects requested it and all denied that this made them feel uncomfortable). Another reason could have been the problem-solving CAI simulation exercise—perhaps it was found difficult or threatening, so their attention was instead directed to the hardware.

This degree of distraction could become a problem. While younger nurses are more sensitised to CAI (its use in schools of nursing has increased), older nurses are not familiar with this method of learning. Although the subjects agreed that the computer should be incorporated as a teaching tool in schools of nursing, they were less positive about its role in their own continuing education.

As the novelty of CAI wears off, learners will direct more of their attention to the actual courseware. Until then, CAI authors are presented with the problem of utiliz-
ing this "newness" but not allowing it to distract the learner.

Gagne is concerned with gaining students' attention and developing expectancies (Chambers & Sprecher, 1983). The author found this a very important external instructional event. If CAI courseware is unable to accomplish this, then one must question the degree of learning attained. One cannot assume that the novelty of CAI will ensure attention--it may do more harm than good.

**Informing the learner of lesson objective.** The subjects were informed by the computer that the CAI simulation exercise was going to help them meet the fourth objective stated in their learning module (see Appendix A). All the learners brought their modules to the CAI session. Some used them for reference during the experience. They were thus informed of what to expect, as well as what was expected of them.

Although this process is commonsense, it is one that could be easily forgotten by the CAI author. In a lengthy CAI lesson, it would be helpful to continually review the objectives so the learner is kept "on track."

The information in the CAI simulation exercise related to the learning module. There were references made to sections the learner could review if having difficulty (more
than two incorrect responses). At one point, new information was presented (the summary statement). Learners were provided with a short and concise text, followed by an example utilizing this new information. They were thus oriented to the new material, which was related to pre-existing knowledge from the learning module.

**Stimulating recall of prior learning.** Throughout the CAI simulation exercise, the learner was required to retrieve information presented in the learning module. Specific directions were provided so only relevant information was recalled and/or two differing pieces of information remained distinct (i.e., General Appearance and Behaviour and Speech were initially kept in separate categories in the CAI simulation exercise as they were in the module). Learning was further guided by the computer referring subjects back to the learning module when a certain difficulty was encountered.

**Presenting stimuli with distinctive features.** The CAI simulation exercises' distinctive features closely related to the data presented in the learning module. The subjects seemed to enjoy its presentation, although some stated the exercise was too specific. They would have liked more open-ended questions in addition to the multiple-choice and
short-answer one provided.

For those who have had previous CAI experience and feel comfortable in sitting down at a terminal, this is a good idea. The ideal simulation is one which is as interactive as possible and provides guidance only when necessary. For the newcomer, however, a fairly structured experience which they can complete and also gain a sense of satisfaction and mastery with is a good beginning. Following this, learners can advance to higher-order CAI lessons. This initial experience is very important and should not be rushed.

**Guiding learning.** Directions were provided in the CAI simulation whenever a new task was expected of the subject. For example, when a mental status examination summary statement was required, a sample of how it should be presented was included to provide a model for the subject to remember. Prompts were also interspersed throughout the simulation, but appeared most frequently following an incorrect response.

**Eliciting responses.** The CAI simulation exercise provided a response to an action choice made by the subject. After choosing mental status examination items to assess, the computer provided the assessment information. Whenever the subject decided to change his/her tactic of examination,
the CAI exercise responded to this change.

Some subjects expressed the desire to "erase" their choice when presented with the consequences of their chosen action. The simulation design, however, provided enough cues to enable them to satisfactorily complete the simulation.

**Providing informative feedback.** Computer assisted instruction feedback requires more than just distinguishing between a correct or incorrect response. It must be informative and provide information and direction to the learner. In being response-sensitive, correct, incorrect and unanticipated answers must be included.

Surprise was expressed when the CAI simulation gave feedback for an incorrect response with a message to try again. Most subjects thought that a mistake or poor choice ended the exercise. Another misconception was that each problem frame had only one correct response. When subjects discovered this was not so, many expressed satisfaction at being able to conduct the mental status examination simulation their own way.

The author utilized fellow nurses and her own personal experience in the development of feedback responses. Since most of the simulation was of a multiple-choice and short-answer nature, responses were not difficult to anticipate.

Dividing the simulation into frames dealing with one
mental status examination section at a time was also helpful in providing quality feedback. The subjects were prevented from mixing information between sections and the author was better able to anticipate possible responses. Keeping each problem frame small and concise also provided immediate feedback in a fairly regular manner.

In developing feedback messages for the simulation exercise, the author was careful to avoid providing too much guidance to the learner. Adults should be permitted to use their own strategies to guide their learning and given assistance only when necessary.

**Assessing performance.** The subjects' performance was assessed using a test of mental status examination application skill. This was delivered before and after the CAI exercise. Some subjects disliked this method of data collection. It may have painfully reminded them of their days in nursing school! Subjects' scores on the CAI simulation exercise were also calculated and recorded for future reference.

**Enhancing retention and learning transfer.** The goal of any problem-solving skill is for the learner to generate other strategies for solving similar problems using other rules. This was not scientifically tested during this study.
However, information retention regarding the two mental status examination sections was enhanced throughout the CAI simulation exercise. This information was repeated several times in tables and lists, and mental status examination items were always capitalized.

In the final sequence of the CAI simulation the learner was presented with a summary of the collected information. Not all of it was relevant to the case—the subject chose the most important information to include in a final summary (a problem-solving skill).

The aforementioned characteristics were included in the CAI simulation exercise. The subjects' attitudes were also assessed to provide information as to the quality of this CAI lesson.

**Attitudes towards computers.** The computer caused anxiety among seven subjects. Although they felt slightly more comfortable in sitting down to a computer terminal following their experience, anxiety about the technology is still prevalent. As shown by a previous study (Ronald, 1979), nurses will feel more comfortable with increased exposure to the medium. It should be noted that over one-half of the subjects (55%) had no previous experience with a computer terminal. This fear of the unknown would play a
part in their feelings towards the machine.

The subjects, on the average, were neutral regarding the ease of learning how to operate a computer. Anxiety could have interfered with their learning as well as the inability of most of the subjects to type or find the correct keys. Only 27% of the subjects were "fairly familiar" with a typewriter or computer keyboard. While instructions on the use of the computer were included in the learning module, this author questions if they were read or the information was retained. The subjects had many questions--most of which were covered in this handout.

The subjects did not see the computer as dehumanizing. This is a change from five years ago (Ronald, 1979). This could be due to the influential role computers play in our lives. Everyone has some connection with a computer (even if it is only a computerized hydro bill!). Many hospitals now have computers in the nursing station for charting, to communicate lab results or for discharge/admission information.

Subjects did not see computers creating more problems than they could solve--however, they did not have access to the Health Sciences Centre Hospital computer. The computer is becoming an acceptable piece of hospital equipment--perhaps the subjects are being too idealistic and not foreseeing the possible problems that could arise (i.e.,
downtime, misprogramming, power failures, "bugs", etc.).

Despite their anxiety surrounding working with a computer, the subjects still support its use in nursing. This is heartening! One reason could be the increased exposure and publicity that computers have attained in the health industry. Most health journals now carry articles describing this phenomena and one can attend seminars to learn the latest in hospital information systems. At least two schools of nursing in the Lower Mainland of British Columbia teach courses using CAI.

Computers are here to stay and the nursing profession needs to adapt to them. It is rewarding to see that the ward staff, the actual users, support their use. This author hopes they are given the necessary time to incorporate this technology into their work life.

Attitudes towards CAI in nursing. Subjects agreed that psychiatric nursing skills can be practised using a computer. This is an important finding as many psychiatric nursing skills are abstract in quality. Of the available CAI lessons, many are written for concrete tasks (i.e., a review of cardiopulmonary resuscitation, new medications and their side-effects or an orientation to the hospital for the new employee). This knowledge can be taught via a CAI lesson using a tutorial or drill and practice design.
Psychiatric nursing skills are more abstract in nature—these can include small group dynamics, a review of the latest psychotherapy techniques, or teaching nurses how to teach a skill to patients. Because these abilities are more interactive and require some decision-making, the usual drill and practice CAI is not the appropriate choice. Courseware developed at Stanford Medical Centre (Hillman, 1971) and the University of California (Brigham, Kamp & Cross, 1972) focussed on two interactive psychiatric skills taught in undergraduate medical education.

Subjects also agreed that the computer should be incorporated as a teaching tool in schools of nursing. This is currently taking place. Despite these two positive statements regarding CAI and its use in nursing, the subjects were less enthusiastic about using it as part of their own continuing education.

Why is CAI acceptable for one group and not another? This author feels the answer lies in the form of education each subject has had most experience with. Nurses are comfortable with practicing a problem-solving skill using, for example, role-playing. They have had previous exposure to this educational technique. The latter may be viable in a nursing school, but its use in a hospital setting is coming into question. Removing at least two (preferably three) nurses from a ward to practice a skill is neither cost-
effective nor, in many cases, feasible. This has given impetus to the development of individualized learning in continuing nursing education.

One answer to this problem may be to link two forms of individualized instruction—such as CAI and a learning module. The majority of the subjects would consider trying this style of education.

Attitudes towards the CAI simulation exercise. The third set of items in the questionnaire assessed the subjects' attitudes towards the CAI simulation exercise. Subjects were unsure whether they would prefer to practice a mental status examination via role-play or CAI. They were also undecided if a computer was the best way to practice this skill. Although role-playing was the preferred educational technique, subjects were not averse to trying CAI.

In addition, the majority of subjects thought learning via a computer nurse-patient simulation would be more difficult than learning via role-play. It is difficult to determine which the participants found the most laborious—the CAI simulation or the act of learning the "ins and outs" of the computer keyboard.

The subjects' likes for the CAI simulation exercise outweighed their dislikes. They enjoyed the immediate feedback and, when their anxiety lessened, a few even enjoyed
the novelty of the computer experience.

Subjects were undecided if practising a mental status examination on a computer was life-like. Two subjects stated the only real way to practice was with a patient—this would be the ideal situation but it is rarely feasible. The computer simulation gives the learner an opportunity to experiment and the feedback, although not always positive, is valid.

Subjects did agree that the CAI simulation exercise offered helpful and informative feedback. This would assist them in finding more likes than dislikes about the exercise (as discussed previously). Humorous responses were enjoyed, as well as those that included their names. Another helpful feedback characteristic was the opportunity to correct any wrong answers. This negative feedback was given in a clear and non-punitive manner.

In summary, all three hypotheses investigated in this study were supported by the research results. Authoring guidelines proposed by Gagne, Wager and Rojas (1981) helped design a quality CAI simulation exercise which subjects completed on their own time.
Limitations

Certain variables influenced the results of this research. They are as follows:

1. The sample size was small—a larger sample would have increased the generalizability of results.

2. The Hawthorne Effect (Roethlisberger & Dickson, 1940) could be, in part, responsible for the results obtained. The innovativeness of CAI and the subjects' involvement in an unusual research project could have influenced the data.

3. Computer assisted instruction is not the usual method of instruction nurses at Health Sciences Centre Hospital receive. The research may have been effective simply because it was different.

4. Much of the study (the learning module, pre and posttests) was administered by the subjects themselves. Thus, completion times of the measures varied. Some handed in their tests almost immediately following the learning module and CAI simulation exercise—while others took much longer. Two subjects needed to be contacted by the author when two weeks had elapsed without any sign of their test packages. The project was completed in three months. The post-CAI questionnaire was completed by all subjects immediately following their CAI experience.
5. The subjects were volunteers—those who wanted to try an innovative educational opportunity. Thus, they were motivated to complete the project. This motivation may have positively influenced the research results.

6. Some subjects may have unconsciously harboured negative attitudes towards computer technology. These feelings may have influenced their responses to the CAI questionnaire.

7. The test of mental status examination application skill was never formally pilot-tested. This may have been responsible for the nonsignificant results on test one.

8. The CAI simulation exercise, although evaluated by several nurses, was never formally pilot-tested. A response including the English spelling of "behaviour" but not the American spelling (behavior) was rejected when a subject did not include the "u." This resulted in the subject receiving feedback to "try again" when in fact she had made a correct choice. This may have influenced the subjects' attitude towards the CAI simulation exercise. Although time consuming and costly in terms of computer dollars, it would have been good practice to thoroughly pilot-test the final product.

Implications

Computer assisted instruction is on the threshold of
becoming an accepted technique used in continuing nursing education. Its success depends on the CAI authors' ability to design a quality lesson. Several implications for future research have emerged from this study.

1. Future researchers would want to decrease the learners' initial anxiety as much as possible. Subjects could be provided with a practice experience at a computer keyboard. Typing lessons might be included. This would help in decreasing both anxiety and the time taken to input responses to a CAI lesson.

An individualized one-on-one computer session may also prove helpful. This would not need to be lengthy, but would provide a consequence-free "hands-on" experience as well as a time for questions and answers. This would do much to reassure the new user.

Background information on computer hardware and terminology may also be beneficial in decreasing anxiety. This technology is everywhere, and the inexperienced may be somewhat hesitant at displaying what, they feel, is ignorance.

It might be interesting to have an experimental group that receives the aforementioned treatment while the control group receives no such experience.

2. Future researchers would wish to incorporate all appropriate options available in the CAI language in their lesson design. These options may include the ability of the student to review a previous frame or skip ahead when the
present one is found too elementary. Although the CAI author requires additional time to become proficient in the use of these options, they provide the learner with more control over the experience and increase the quality of the lesson design.

3. A characteristic of a simulation exercise is that it is as life-like as possible. A future research study might be to examine attributes that make a CAI simulation "real." It would be interesting to expand on the Kirchoff and Holzemer (1979) study, and focus on those characteristics which help to motivate the learner and maintain his/her interest. These may include the use and clarity of instructions (just how much information should the author include?), the benefits of too much or too little interaction between learner and computer, the qualities of the computer itself (is it human-like?), and the design of the physical surroundings in which the simulation is practiced (can a nurse practice a problem-solving exercise in the middle of a busy nursing station?).

4. The subjects in this study required reassurance from the author during the CAI experience. What if a resource person had not been available?

It would be interesting to conduct a future study which examined the "advisor concept" (Chambers & Sprecher, 1983). This refers to the ability of a CAI lesson to demonstrate a
personality—to "break-in" when the learner is about to encounter a potential problem. The goal would be to help the learner discover and correct any misconceptions on their own. The advisor would become their resource "person."

How could this be utilized in CAI simulation exercises? Care must be taken that the advisor did not provide too much direction, or interject at a time when the learner was in the middle of solving a problem. Would nurses accept this "new" in-service instructor? As more sophisticated CAI languages evolve, the researcher proposes that this will be an important concept to study.

5. Future studies should consider the new computer hardware and its usefulness to CAI. For example, lesson design can now incorporate the use of computer graphics and video. Do these techniques help to gain the learners' attention--or do they instead divert it from the objective of the lesson? The researcher would like to replicate this study and utilize video in the simulation exercise to discover its effect on learning.

6. Several subjects disliked having their mental status examination performance evaluated via pre and posttests. Future studies may wish to allocate this function to the computer. One way to assess learning in this study would be via a second CAI simulation exercise. It would vary in content from the original, and require the learner to
actively search for cues to stimulate retrieval of the appropriate information. Time and response scores could then be compared to original scores. Ideally, the learner should be better able to synthesize the appropriate rules and apply them to the new situation. Response time should be shorter, scores should be lower, and there should be fewer feedback messages needed. Of course, the researcher must be sure that other variables, such as anxiety, would not interfere with this form of evaluation.

7. The pre and post-CAI questionnaire would be interesting to re-administer after Health Sciences Centre Hospital-Psychiatric Unit installs a computer system. Perhaps the subjects would then feel more positive about utilizing CAI in their continuing education. If this was not the case, it would be important for the researcher to identify variables affecting these results.

8. As other CAI guidelines are proposed, researchers must test their usefulness in the design of a quality lesson—whether it be a simulation or drill and practice exercise. As research progresses, information may then be gleaned to produce standards for quality courseware design.

**Conclusions**

Continuing education is fundamental to the competent
practice of nursing. The computer is a viable medium to utilize in the achievement of this goal. It avoids the costs involved in hiring instructors, scheduling class times and repeating programs—and the student can select his/her own pace. Many hospitals are already equipped with terminals and, once the CAI lesson is written, it can (and should) be standardized between institutions. The only cost is the rental time of the computer terminal.

Computer assisted instruction can become an accepted technique in continuing nursing education. However, this is dependent on several factors.

Practising registered nurses and those returning to the work force must be gradually exposed to CAI. This, and the provision of positive experiences, will assist in reducing the users' fears and misconceptions. The CAI author should emphasize reinforcement of behaviour, provide the adult student with information to judge their own learning, and proceed in stages from concrete rewards (notes on the personnel file is one example) to self-satisfaction. If negative feelings remain, then it is uncertain whether CAI will ever be accepted by its users.

If CAI is to be utilized in individualized learning, policies and procedures allowing and encouraging it need to be developed by nursing department administration. Attention must be given to their interest in CAI, other hospital
departments that will be most supportive, topics that could be enhanced, the amount of training required to bring staff to a basic CAI skill level, available software, and the degree to which the educators are sophisticated in CAI. In-service education will need to be allotted a specific time and priority—not just fitted in when there is nothing else to do.

Guidelines for CAI courseware design also need to be developed, tested and refined. The success of CAI software (whether it be a simulation exercise or drill and practice) is dependent on the CAI authors' ability to design a quality lesson based on sound educational principles. This study has identified the helpfulness of one set of guidelines (Gagne, Wager & Rojas, 1981) in the achievement of a quality simulation exercise. However, more research is needed in the development of guidelines (and ultimately standards) for other computer teaching capabilities.

At its current level, the author recommends CAI remain as an adjunct to other forms of continuing nursing education. The health industry is just beginning to establish their information systems and require time to integrate this new communication tool. Full length courses require large storage capabilities which most hospitals do not yet possess. Educators also need time to refine and evaluate their CAI authoring skills.
A joining of CAI and learning modules might be a practical way of introducing nurses to both CAI and individualized learning. A module provides a non-threatening vehicle for learning factual information. After mastering this, the learner could proceed to the computer for a short tutorial, drill and practice, or simulation exercise.

A whole new field of research is open to nurse educators interested in applying CAI to continuing nursing education. The nursing profession must actively concern themselves with quality lesson design. Effective CAI lessons must be provided to the potential learner. This study has attempted to contribute to the knowledge base in this area.
REFERENCE LIST


BIBLIOGRAPHY

The following books and articles are provided for the readers continuing education in computer assisted instruction. While not included in this thesis, they helped to increase the author's knowledge and interest in CAI.


APPENDIX A

A Learning Module on Mental Status Examination
A LEARNING MODULE
ON
MENTAL STATUS EXAMINATION

This programmed unit was prepared by Sharon Kervin, R.N., B.S.N., Graduate Student in Administration/Adult/Higher Education. It has been developed to help meet the requirements for a M.A. degree in Adult Education.

* Special thanks to all who reviewed and pre-tested this module - especially Judy Bass.
MENTAL STATUS EXAMINATION

GOAL:

Upon completion of this learning module, the learner will be able to successfully complete a mental status examination.

OBJECTIVES:

The learner will be able to:

1. Define mental status examination, incorporating its four main elements.
2. Name six sections assessed in a mental status exam.
3. List at least three items to be recorded in each section.
4. Write a mental status examination summary (General Appearance and Behaviour and Speech sections only) including five items identified by this author.
WHAT IS A MENTAL STATUS EXAMINATION?

Mental status examination, being a common assessment tool, begins with observations made on your first meeting with a client. A mental status examination can be carried out at a specific time, or be an ongoing process. Although a therapeutic relationship need not be immediately established, one should have some basic factual information about the new client by which to judge the data. It is not specifically limited to a discussion of how the client thinks or feels; in fact, one of the most suitable times for carrying out the mental examination is when you are discussing a general topic and you can play the role of "participant observer".

Following the establishment of some degree of rapport, discuss your client's feelings and any unusual mental experiences he has had or is having. You may wish to begin with milder, more 'ordinary' ones and proceed to the more severe disorders. In addition to recording how he looks, speaks, acts, dresses, etc., also make note of mood, emotional reaction, affect, abnormal mental content, special preoccupations, obsessive thinking, compulsive behaviour, the presence or absence of delusions, hallucinations and insight, and other pertinent psychiatric facts. With increased structuring of the interview, some of the less apparent signs and symptoms may be elicited.

Included in a mental status examination is your evaluation of the client's judgement, reasoning, intelligence and sensorium. This is based on more direct testing of his/her intellectual capacities.
In summary, a mental status examination is a systematic method of recording four current elements: 1) observations 2) mental signs 3) symptoms and 4) the functioning level of your client.

As it is an important aspect of diagnosis and treatment, it is essential to have a written record in order to show and substantiate the changes made.

One must not forget the patient's condition and his/her reaction to the interview situation. How comfortable you feel will greatly influence your client's accessibility and response. It is important to obtain information during the general interview by following the client's lead and displaying consideration, empathy, respect and warmth.

To evaluate your knowledge of the preceding information, answer the following questions. Cover the answers with your coloured marker.

1. Answer the following questions True or False:
   
a) Mental status examination begins only when there is an established relationship with a client.
   
False - a mental status examination can begin with your very first meeting. These initial observations are very important!

b) A mental status examination can be carried out on an informal and casual basis with your client.

True - actually, very important information can be obtained via an informal assessment.

2. Mental status examination is a systematic method of recording what four elements?

1) observations
2) current mental signs
3) symptoms
4) functioning level
3. Your reaction towards your client will influence the assessment situation and information obtained. What four elements of a therapeutic relationship must be included?

1) consideration
2) empathy
3) respect
4) warmth

If you have correctly answered questions 1 to 3, proceed to learn about the first item to assess in a Mental Status Examination - that of General Appearance and Behaviour.

If you were unable to correctly answer two questions, then please re-read this introductory section.
SPECIFIC ITEMS TO RECORD

1. GENERAL APPEARANCE AND BEHAVIOUR -

The first item to assess in a Mental Status Examination is your client's general demeanor. First impressions are important; this section refers to the overall appearance of the client including his bearing, dress, facial expression, movements and personal care.

Attitude:
- Is he/she?
  - Apprehensive, belligerent, co-operative, demanding, dependent, evasive, friendly, genial, indecisive, indifferent, irritable, lack of confidence, negativistic, outgoing, overbearing, resentful, resistive, self-centered, stubborn, suspicious, unco-operative, etc.

Behaviour:
- During the examination, on admission, since admission, obtain first-hand information or description as to whether patient lies on his/her bed, plays games, prefers to daydream, talks with other people, etc.

Condition of Dress and Grooming:
- Appropriate, bizarre, clean, disheveled, eccentric, meticulous, neat, neglected, sloppy, tidy, unkempt, etc.

Facial Expression:
- Does he/she appear?
  - Angry, animated, anxious, apprehensive, demanding, disinterested, ecstatic, expressionless, fatigued, fearful, fixed, grimacing, hostile, inappropriate, interested, masked, mobile, sad, suspicious, tearful, etc.

General Affect:
- Does he/she look?
  - Bewildered, blank, blunted, bright, confused, elated, exuberant, flat, happy, indifferent, morose, pondering, sad, shallow, solemn, thoughtful, etc.

General Mood:
- Is he/she expressing feeling of?
  - Agitation, anxiety, apathy, apprehension, boredom, calm, changability, cheerfulness, control, depression, despondency, elation, excitement, fear, guilt, inappropriateness, optimism, perplexion, preoccupation, shallowness, stability, sullenness, tearfulness, etc.
Motor Activity:  
- Automatisms, awkwardness of movements, busyness, bizarre behaviour, fumbling, gestures, inhibition, jerkiness, lack of spontenaiety, loss of initiative, maniacal flight, perseveration, rapidity, restlessness, retardation, stupor, tremour, type of gait, under or over activity, unsteady, etc.

Look for:  
- Inhibition, jerkiness, lack of spontenaiety, loss of initiative, maniacal flight, perseveration, rapidity, restlessness, retardation, stupor, tremour, type of gait, under or over activity, unsteady, etc.

Posture:  
- Changing, constrained, co-ordinated, erect, leaning back in chair, manneristic, passive, posing or showing off, recumbent, relaxed, rigid, sitting on edge, stereotype posture, stiff, symbolic postures, tense, voluntary, etc.

Is it?

The information obtained can be recorded in either point form or narrative style. It is important for each nurse to develop his/her own unique method of presentation!

To evaluate your learning, try the following questions. Cover the right hand column with your coloured marker.

1. Answer True or False -

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>ANSWER</th>
<th>CORRECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) When meeting a client for the first time, one should ignore first impressions until a diagnosis is formulated</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>b) It is important to attain information about a client's behaviour prior to admission</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>c) A client who is agitated is displaying a degree of affect</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>d) A client who is restless and/or overly-active is displaying a form of motor activity</td>
<td>T</td>
<td></td>
</tr>
</tbody>
</table>
2. Imagine that you have been given the task to list those aspects of a client's mental status relating to appearance and behaviour. Check each of the following items that you would include in your list:

- co-operative attitude
- evidence of socialization
- expressionless facial expression
- degree of elation
- gait
- motor co-ordination
- erect posture
- indifferent attitude
- clothing style
- hygiene and grooming

Answer: ✔ All of them!

If you have correctly answered the preceding questions, please continue to the next section of the learning module. You have done well!

If you were unable to correctly answer the above questions, please re-read and try again.
2. SPEECH -

The form and quality of a client's speech is a second item to be assessed. These elements are considered more important than actual content.

Form can be defined as the basic arrangement and style of the speech pattern. The speech form will provide you with clues about any psychiatric pathology your client is experiencing.

Quality refers to the characteristics of the conversational style or manner.

In other words, form is the general pattern of the client's speech; quality is its' specific features or properties.

A third item to include is the rate of the speech pattern. Verbatim examples should always be obtained, if possible. The client's thought processes and content can manifest itself in his/her speech; therefore these two sections are closely linked. You will learn more about thought processes and content further on in this module.

FORM:

Is it? - Blocking, circumstantial, clanging, clear, concise, confabulatory, disjointed, echolaliative, hesitant, incoherent, illogical, irrelevant, logical, monosyllabic, neologistic, profane, rambling, repetitive, scattered, tangential, uncommunicative, etc.

Does he/she display - Flight of ideas, initiative, perseveration, verbigeration, etc.
2. SPEECH, cont'd:

QUALITY:
Is it? - Abrasive, abusive, bitter, declamatory, dramatic, evasive, excessive, flighty, garrulous, grandiose, immature, jocular, loud, monotone, mumbling, rhyming, sarcastic, silly, slurring, stuttering, verbose, whispered, witty, etc.

Does he/she display - Change in tone, change in topic, loss of topic, word salad, whining, etc.

RATE:
Is it? - Accelerated, even, hurried, laboured, leisurely, mute, pressured, rapid, relaxed, retarded, slowed, strained, etc.

Now try the following questions:

1. What three characteristics of your client's speech pattern are important to assess?
   Answer: form quality rate

2. Should you include actual statements made by your client in a mental status examination report? If yes - why?
   Answer: Yes - to provide specific and objective data.

3. Check off the following descriptions that would be considered when assessing speech quality:

<table>
<thead>
<tr>
<th>Description</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>clanging</td>
<td>✔</td>
</tr>
<tr>
<td>pressured</td>
<td>✔</td>
</tr>
<tr>
<td>grandiose</td>
<td>✔</td>
</tr>
<tr>
<td>stuttering</td>
<td>✔</td>
</tr>
<tr>
<td>mute</td>
<td>✔</td>
</tr>
<tr>
<td>flighty</td>
<td>✔</td>
</tr>
<tr>
<td>retarded</td>
<td>✔</td>
</tr>
<tr>
<td>immature</td>
<td>✔</td>
</tr>
</tbody>
</table>

So far, you have learned two areas that are to be recorded in a Mental Status Examination. You have done well! Continue to next section.
3. **EMOTIONAL STATE**

The third area in which to gather information is your clients' emotional state. His/her mood and affect is described in detail; this will involve subjective and objective data.

Although often used interchangeably, mood and affect are two distinct concepts. **Mood** is the patients' subjective description of feelings (experienced internally and expressed by him/her), while **affect** is the feeling tone that accompanies an idea or emotional reaction (and is observed by the interviewer). Thus, mood is subjective data, while affect is objective data.

Inferences about mood can be drawn from the clients' past history; inferences about affect are confined to current observations. This objective information is an important contribution to a Mental Status Examination, however, it is essential to always validate this data in a subjective manner.

The relation between thought content and mood and affect should be examined in terms of the influence of the thought content on the affect. You will learn more about thought processes in the next section.

**Mood:**

*Ask*

- How are you? How do you feel?
- Do you find it difficult to start new things?
- Is it necessary to increase your effort to accomplish your usual tasks?
- Are you frightened?
- Do you feel as if you are in a panic?
- Do you become angry or irritable? When? Where? Why? Easily?
- Involved in many fights? Fantasies of assault?
- How are you when driving? Many traffic violations?
MOOD:

Ask

- Have you ups and downs? How often? Since when?
- What part of the day is most pleasant? Least pleasant? In what way?
- Have you any aches or pains? Appetite? Bowel habits? Menstrual and sexual disturbances? Sleep disturbances?
- Do you feel despondent? Would you rather end your life than continue feeling as you do?
- Any suicide attempts?
- What are you feeling right now?
- You seem _________. Is that how you are feeling?
- Are you tense or anxious right now?
- Are you a fairly controlled person?
- How do you express your innermost feelings - sadness, for example?
- What is the accompanying affect?

The questions supplied here to elicit subjective responses regarding your clients' emotional state are only examples of the areas to explore. Some of these topics may require direct questioning (e.g., suicide). However, much of the subjective information can be obtained in a focused (yet conversational and non-threatening) manner. For example, a client alludes to a history of violent outbursts; the nurse can direct the interview to this topic by discussing various situations where emotional responses may "get out of hand".
AFFECT:

Is the client? - Agitated, alert, apathetic, apprehensive, bewildered, blank, boastful, bright, changeable, complacent, composed, confused, controlled, showing decreased interest, depressed, elated, exhuberant, forgetful, flat, happy, hopeless, hostile, immature, indifferent, irritable, irritable, manifesting anxiety, morose, ponderous, retarded, sad, shallow, solemn, thoughtful, unstable, etc.

- Is affect appropriate to ideas?
- What is the clients' mood?

Observe for - Any somatic evidence such as flushing, perspiration or tachycardia; appropriateness of affect to ideas; bluntness of affect, crying, degree of control, lability of affect, level of comprehension, etc.

As you have probably guessed, all elements of a mental status examination contain similar elements. Your observations and information work together in producing a complete assessment.

Now try the following questions:

1. In describing an emotional state, one assesses what two characteristics?
   Answer: mood affect

2. In identifying a clients' emotional state, would you include subjective as well as objective data?
   Answer: yes

3. Answer the following questions True or False:
   a) Mood is the feeling state that externally accompanies an idea or emotional reaction.

   False - Mood is the feeling state experienced internally; affect is the feeling tone that externally accompanies an idea or emotional reaction.
AFFECT:

3.  b) Assessing a clients' potential for suicide may require direct questioning.

   True – Often a client will not include this information during an informal conversation.

c) It is beneficial to question a client regarding his/her history of violence and/or assault.

   True – A significant history of anti-social behaviour is important to note for a Mental Status Examination.

d) The interviewer does not need to validate objective data with subjective information.

   False – To ensure a more accurate Mental Status Examination, one's observations should be checked out with the client.

4. THOUGHT PROCESSES AND CONTENT

   This section refers to your client's special preoccupations and experiences. If a formal thought disorder exists, it will likely be recognized through his mental content. As always, the client should be allowed to tell his story spontaneously, however, it may be necessary to supplement this by a question - and - answer method of examination. Verbatim statements can be recorded to validate your observations. Throughout your assessment always be on the lookout for indicators of a possible thought disorder.

   These may include:

   - derailment
   - dissociation
   - level of comprehension
   - limited attention span
   - poverty of content of speech
4. THOUGHT PROCESSES AND CONTENT - Cont'd.

<table>
<thead>
<tr>
<th>Delusions:</th>
<th>Ask</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Have you had any unusual or unpleasant experiences?</td>
<td></td>
</tr>
<tr>
<td>- Have you had any peculiar thoughts or dreams? Thought broadcasting, thought echo, thought insertion, thought blocking.</td>
<td></td>
</tr>
</tbody>
</table>

| Dreams: |
| - Childhood dreams, current dreams and hypnagogic phenomena, mood of dreams (pleasant or unpleasant), night and day dreams, repetitive dreaming. |
| - Verbatim examples are important here. |

| Expansive Trends: |
| - Do you feel superior to others? |
| - Have you any unusual powers? |
| - Have you a special mission in life? |
| - Are you able to influence others easily? |

| Feelings of Unreality: |
| - Autism, depersonalization, derealization, dulled perceptions, changed perception, heightened perception. |
| Ask |
| - Do persons and objects appear strange to you? |
| - Do you feel as if you are in a fog? |
| - Are you aware of a change in yourself? |
| - Do you feel your identity lost? |
| - Do you feel unnatural? |

| Hallucinations: |
| - Do you hear buzzing in your ears? |
| - Noises? Voices? On what occasions? |
| - Are they quiet? Loud? Clear? Male or female voices? |
| Auditory |
| - Do you recognize them? What do they say? |
| - Are they pleasant or unpleasant? |
| - Do you have an explanation for them? |
4. THOUGHT PROCESSES AND CONTENT - Cont'd.

<table>
<thead>
<tr>
<th>Hallucinations:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gustatory</strong></td>
<td>- Have you any peculiar tastes in your mouth?</td>
</tr>
<tr>
<td></td>
<td>- Does everything taste normal? Sour? Bitter? Metallic?</td>
</tr>
<tr>
<td></td>
<td>- Does your food taste as if it has been tampered with?</td>
</tr>
<tr>
<td><strong>Olfactory</strong></td>
<td>- Are you bothered by strange odours?</td>
</tr>
<tr>
<td></td>
<td>- Are you forced to bathe frequently?</td>
</tr>
<tr>
<td></td>
<td>- Have you smelled ether? Gas?</td>
</tr>
<tr>
<td><strong>Organic</strong></td>
<td>- Do you feel any pressure, tingling or numbness?</td>
</tr>
<tr>
<td></td>
<td>- Any feelings of electricity or vibrations?</td>
</tr>
<tr>
<td><strong>Visual</strong></td>
<td>- Do you see things other people can't see?</td>
</tr>
<tr>
<td></td>
<td>- Do you ever see strange things? Where? On what occasions?</td>
</tr>
<tr>
<td></td>
<td>- How do you explain these things?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Illusions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Have you misinterpreted shadows or noises?</td>
</tr>
<tr>
<td></td>
<td>- Do body sensations lead you to think that you are being touched?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Obsessions/Compulsions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Conscientious, indecisive, perfectionistic, rigid?</td>
</tr>
<tr>
<td>- Are you aware of thoughts that you are unable to control or rid yourself of?</td>
</tr>
<tr>
<td>- Do you have fears that influence your life? (Crowds, heights, open or closed spaces, storms?)</td>
</tr>
<tr>
<td>- Is it difficult to come to a decision?</td>
</tr>
<tr>
<td>- Are you compelled to follow rituals in dressing, walking, etc?</td>
</tr>
<tr>
<td>- Do you always like to have things 'just so'?</td>
</tr>
</tbody>
</table>
Passivity Feelings:  - Do you feel your thoughts or actions are controlled by others?
(from ideas of influence to frank delusions of being influenced)
- Are your thoughts taken away from you?
- Is your mind or body influenced by machines? Electricity? Mind-reading? Telepathy?

Persecutory Trends: - Do you enjoy the company of others?
(from ideas of reference to persecutory delusions)
- Do you think they talk about you? Hold grudges against you?
- Are you suspicious of others?
- Are you inclined to see meanings into all things?
- Do you feel wronged? Annoyed? Robbed? Poisoned?
- How do you explain these feelings?

Self-condemnation: - Do you tend to be self critical?
(from increased self criticism to frank self-condemnatory delusions)
- Do you feel inferior to others?
- Are you 'down' on yourself for the mistakes of others?
- Are you being punished for something that you have done wrong?

Somatic Trends: - How is your health?
(from hypochondriacal ideas to somatic delusions)
- Have you any aches or pains?
- Is there anything wrong with your body?
4. **Thought Processes and Content, Cont'd:**

1) Match the following questions to the most appropriate term that each is assessing.

Check your answer with the far right hand column.

<table>
<thead>
<tr>
<th>Question</th>
<th>Term</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you feel unnatural or not like yourself?</td>
<td>a) Delusion</td>
<td>3.</td>
</tr>
<tr>
<td>3. Have you had any thoughts or dreams that seem unusual to you or others?</td>
<td>c) Grandiosity</td>
<td>2.</td>
</tr>
<tr>
<td>4. Is there anyone after you or wanting to harm you?</td>
<td>d) Visual Hallucinations</td>
<td>5.</td>
</tr>
<tr>
<td>5. Do you see things other people can't see?</td>
<td>e) Persecutory Trends</td>
<td>4.</td>
</tr>
</tbody>
</table>

2) Check one of the following three areas which most likely assesses the existence of a formal thought disorder:

- General appearance and behaviour
- Cognitive functioning
- Thought processes and content

Answer: ☑

3) When assessing the content of a client's thought, one should ask questions that are:

- deliberately vague and thus open to many interpretations
- indirect, subtle, and carefully introduced
- simple and direct, with no prompting of the patient

Answer: ☑
5. COGNITIVE FUNCTIONING

Not every patient requires total cognitive testing. These tests are indicated for distinguishing between organic brain diseases and functional psychiatric illness, diagnosing delirium and dementia, and estimating intelligence in patients who may appear mentally deficient. This area utilizes more of the question-and-answer method, however, abrupt questions should be avoided. An explanation should be given prior to testing; one useful way is to explain the test results as a baseline for checking his/her progress. If the patient fails, do not succumb to giving the correct answers! The same tests may be used at a later date.

A. Grasp of General Information:  
   - Patient may be asked to relate current events, largest cities in Canada, Prime Minister, Premier of B.C.
   - Patient may be asked to read something and then repeat it giving as many details as possible.

B. Insight:  
   - It is also important to obtain the client's idea of why he/she came for help.
   - Has there been a change in you?
   - What brings you into hospital?
   - Do you feel your difficulty is within you?

C. Judgement:  
   - This is one of the more difficult parts of the examination to test thoroughly in a short contact with a client. The best way is by means of observation in actual situations. These abstract thinking tests help to identify organic pathology and the thought impairment of schizophrenia.
5. COGNITIVE FUNCTIONING, Cont'd:

E. Memory:
   b) Recent  
       - Where do you live?  
       - How long have you lived there?  
       - When did you come to hospital?  
       - How did you come to hospital?  
       - What did you do this morning?  
   c) Recall  
       - Have client recall three given words immediately, after a given time, or after an interruption.

F. Orientation:  
    - Time, place, person.  
    - Can your client identify doctor, nurse, patients?

G. Concentration and Attention:
   a) Digit Span  
      - 5 - 8 digits forward  
      - 4 - 6 digits backward  
      - Ask patient to count up to a given number and note the time taken.  
   b) Calculation  
      - Subtraction by sevens from 100.

H. Performance re level of education:
   a) Reasoning  
      - Is the client able to draw conclusions from premises?  
      - Can he/she think through consequences of actions?  
   b) Grasp  
      - Does the client understand the conversation?  
      - Are his/her responses appropriate to the topic?  
   c) Logic  
      - Does he/she show a fairly orderly response?  
      - Is the client easy to understand?
5. **COGNITIVE FUNCTIONING, Cont'd:**

To test your knowledge of assessing cognitive functioning, try the following questions:

1) **Answer True or False:**

   a) Every patient requires cognitive testing  \( \text{F} \)
   
   b) Cognitive testing is mainly accomplished via a question and answer method  \( \text{T} \)
   
   c) One should not give an explanation prior to testing  \( \text{F} \)
   
   d) Correct answers should be given to the client upon completion of cognitive testing  \( \text{F} \)

2) **Matching Quiz:**

Match the following items assessed in cognitive functioning with the appropriate questions. Check your answers with the right-hand column.

<table>
<thead>
<tr>
<th>Item</th>
<th>Questions</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Grasp of General Information</td>
<td>&quot;What would you do if a fire broke out in a theatre?&quot;</td>
<td>(c)</td>
</tr>
<tr>
<td>b) Insight</td>
<td>&quot;What day is it?&quot;</td>
<td>(e)</td>
</tr>
<tr>
<td>c) Judgement</td>
<td>&quot;Who is the Prime Minister of Canada?&quot;</td>
<td>(a)</td>
</tr>
<tr>
<td>d) Memory (remote)</td>
<td>&quot;What year were you born?&quot;</td>
<td>(d)</td>
</tr>
<tr>
<td>e) Orientation</td>
<td>&quot;Please count backwards from 100 by 7's.&quot;</td>
<td>(f)</td>
</tr>
<tr>
<td>f) Concentration and Attention</td>
<td>&quot;What brings you into hospital?&quot;</td>
<td>(b)</td>
</tr>
</tbody>
</table>

When you have finished this section, continue to the sixth and final item to be assessed in a Mental Status Examination.
This is the last step in a mental status examination, and is meant to be a summary or conclusion drawn from all the previous items. It is helpful in gaining a diagnostic impression of your client's symptoms as well as gathering some background information. Included in this summary are your own impressions and feelings regarding the patient and/or the assessment interview.
The following is simply one example of a Mental Status Examination.
The style will vary according to your own abilities, knowledge, focus, manner of documentation and the patient him/herself.

Mental Status Examination

Mr. John Edwards
Age - 27
D.I.H. - 2.

Mr. Edwards was cooperative during the interview but both his attitude and facial expression were suspicious and apprehensive. Affect was blunted - with some inappropriate smiling. He presented as clean, neat and appropriately dressed; some hand-wringing was observed; posture was somewhat erect; his behaviour isolative (preferring to stay in his room); and he reports his mood to be depressed. Speech was clear but hesitant in form, with a soft quality and slow rate.

Mr. Edwards appeared depressed and slightly irritable, and he exhibited a blunted and sad affect. As rapport was established, his apprehension decreased. He admitted to feeling distrustful and anxious about his first psychiatric hospitalisation. Accompanying his anxiety and depressed feelings are bowel disturbances (diarrhea) and insomnia. Mr. Edwards described his current behaviour as withdrawing into himself, avoiding social contacts and becoming more irritable and "sensitive".

He denied previous suicide attempts or present suicidal ideation.

During the interview, Mr. Edwards displayed no evidence of thought disorder, although a low self-confidence was apparent. This was validated by the client - "Why would anyone want to spend time with me anyway?" and "My whole life has been a failure; I'm worth nothing."
The patient displayed a good grasp of general information and judgement. Short and long term memory were intact; he was oriented to time, place and person and concentration and attention were slowed but not impaired. (The reason for being in hospital was described as an inability to cope. "I can't cope anymore. I feel like not doing anything - even eating is a major chore. I'm afraid of the future if I can't shake this.")
**GENERAL APPEARANCE AND BEHAVIOUR**

**ATTITUDE:**

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprehensive</td>
<td>anxious or fearful about the future</td>
</tr>
<tr>
<td>Belligerant</td>
<td>tends to be aggressive, argumentative, assertive, combative, defiant and to test limits, hostile, quarrelsome;</td>
</tr>
<tr>
<td></td>
<td>in general - ill-natured</td>
</tr>
<tr>
<td>Co-operative</td>
<td>shows willingness to conform to demands, is agreeable, compliant and amenable</td>
</tr>
<tr>
<td>Demanding</td>
<td>makes insistant and persistent demands for excessive attention, service or goods</td>
</tr>
<tr>
<td>Dependent</td>
<td>tends to look to others for emotional support; requires constant reassurance and direction; displays strong feelings of personal inadequacy; accompanying behaviour may include actual physical clinging to others</td>
</tr>
<tr>
<td>Evasive</td>
<td>tends to make excuses for his/her actions or inactivity (especially if lazy or unambitious); rationalizes his/her behaviour and/or knowingly neglects, evades or disowns his/her responsibilities; is unrealistic in facing his/her responsibilities or acknowledging his/her true situation</td>
</tr>
<tr>
<td>Friendly</td>
<td>patient is sociable, outgoing, is able to initiate friendship, is generally helpful and shows awareness of other's needs</td>
</tr>
<tr>
<td>Genial</td>
<td>patient's disposition is of an agreeable harmonious nature</td>
</tr>
<tr>
<td>Indecisive</td>
<td>habitually unable to make an independent decision</td>
</tr>
<tr>
<td>Indifferent</td>
<td>patient characteristically lacks interest in and concern about his/her condition and situation and that of others; tends to remain aloof and emotionally detached</td>
</tr>
<tr>
<td>Irritable</td>
<td>patient is short-tempered, easily angered, or upset; exhibits low tolerance for frustration; general disposition demonstrates a volatile and/or impatient nature</td>
</tr>
</tbody>
</table>
General Appearance and Behaviour - cont'd:

**Attitude:**

- **Lack of confidence** - characteristically appears inhibited, timid, shy, demonstrating feelings of uncertainty, inadequacy, inferiority and self-consciousness

- **Negativistic** - characteristically not positive, markedly prohibitive, denies or refuses treatment program, suggestion or direction given

- **Overbearing** - exhibits a grandiose, superior attitude; is domineering, arrogant and proud; regards others with disdain as being his/her inferiors; may attempt to monopolise conversations and to control situations

- **Outgoing** - characteristically friendly, responsive, demonstrates understanding of and sympathy for other patients; is spontaneous in offering to help others

- **Resentful** - patient's attitude is one of resentment, bitter indignation and displeasure at alleged wrongs, insults and injuries others have done to him/her

- **Resistive** - adjustment is totally unsatisfactory, as patient deliberately hinders, opposes, resists, or obstructs any treatment, program, suggestion or direction given

- **Self-centered** - patient is primarily concerned with his/her own desires, interests, needs and problems while being indifferent to those of others; tends to be narcissistic and to resent or display jealousy of attention which is shown to others; is selfish and often given to self-indulgence and self-pity

- **Stubborn** - tends to be defiant, obstinate, obstructive, resistive and self-willed

- **Suspicious** - patient's attitude is one of distrust of others; she/he is prone to accuse others of ulterior motives or of harbouring ill will against him/her

- **Unco-operative** - patient is either unwilling or unable to conform to demands
General Appearance and Behaviour – cont'd:

CONDITION OF DRESS:

Appropriate – clothing worn is suitable for the ensuing activity or environment

Bizarre – patient is dressed inappropriately, overdressed or oddly attired in such a way as to indicate eccentricity or style, mode or extravagance and incongruity of colour combinations

Clean – refers to personal cleanliness of patient and his/her clothing even though there may be obvious disorganization of dress

Disheveled – see Unkempt

Eccentric – see Bizarre

Meticulous – the patient has dressed paying particular attention to detail

Neat – see Clean

Neglected – dress and personal hygiene indicate that the patient is either incapable of or has disregarded self-care. Patients, without direction or attention from nursing staff, would be unmindful or unconcerned about personal care

Sloppy – see Unkempt

Tidy – indicates regular organization and arrangement of dress

Unkempt – dress shows signs of disorganization or general deficiency in order

FACIAL EXPRESSION:

Angry – reflective of any strong expression of adverse feeling such as anger, hate, obstructiveness, resentment, resistance, etc.
**Facial Expression:**

<table>
<thead>
<tr>
<th>Expression</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animated</td>
<td>Facial expression is suitably responsive to the ensuing stimuli or situation, includes positive responses such as appears happy, bright, content, smiling, etc.</td>
</tr>
<tr>
<td>Anxious</td>
<td>Showing apprehension, uneasiness, worry, etc.</td>
</tr>
<tr>
<td>Apprehensive</td>
<td>Appears anxious, fearful</td>
</tr>
<tr>
<td>Demanding</td>
<td>Reflects boldness</td>
</tr>
<tr>
<td>Disinterested</td>
<td>Shows lack of interest</td>
</tr>
<tr>
<td>Ecstatic</td>
<td>Reflects strong emotion - great delight, grief, overpowering joy, passion, rapture</td>
</tr>
<tr>
<td>Expressionless</td>
<td>Face registers no specific emotion but appears blank, emotionless, immobile and unresponsive</td>
</tr>
<tr>
<td>Fatigued</td>
<td>Face may be drawn and haggard, showing signs of defeat, exhaustion, hopeless resignation, stress and tiredness</td>
</tr>
<tr>
<td>Fearful</td>
<td>Expression reflects feelings of anxiety, apprehension, fright, strain and tension</td>
</tr>
<tr>
<td>Fixed</td>
<td>Appears firmly set, immovable, remaining in the same position</td>
</tr>
<tr>
<td>Grimacing</td>
<td>Expression consists of voluntary or involuntary frowning, scowling, or contorted facial movements which reflect feelings or disgust, disapproval, displeasure or resentful puzzlement</td>
</tr>
<tr>
<td>Hostile</td>
<td>See Angry</td>
</tr>
<tr>
<td>Inappropriate</td>
<td>Facial expression is unsuited to the prevailing stimuli or environment, being entirely out of character with the usual response which the situation would elicit</td>
</tr>
<tr>
<td>Interested</td>
<td>Reflects concern, engaged in the attention or engrossed by the situation</td>
</tr>
<tr>
<td>Masked</td>
<td>Immobility of facial expressive movements, usually caused by increased muscle tone</td>
</tr>
<tr>
<td>Mobile</td>
<td>Appears fluid - can change rapidly or easily in response to different conditions, feelings, moods or needs</td>
</tr>
</tbody>
</table>
General Appearance and Behaviour – cont’d:

Facial Expression:

Sad – appears depressed, melancholic, expression reflects grief, misery or unhappiness

Suspicious – shows or expresses mistrust

Tearful – on verge of tears, in tears, weeping

GENERAL AFFECT:

Affect – the feeling-tone accompanying an idea

Bewildered – used to describe the lost, dazed, perplexed, puzzled patient who appears to be confused but shows a sort of numb apathy about his confusion

Blank – void of interest or expression; an empty surface; has no impressions

Blunted – dulled; an “under” response

Bright – shining, brilliant, vivid, vivacious

Confused – a state of disordered orientation; mixed up or not knowing which is which

Elasted – consisting of feelings of euphoria, triumph, intense self-satisfaction, optimism

Exuberant – high-spirited, enthusiastic, exhilarated, elated, zestful

Flat – general impoverishment of emotional reactivity or failure to react appropriately; emotionally bleak, dull, colorless, unresponsive, cold, removed, uninvolved, unconvincing.

Happy – content, glad

Indifferent – impartial, neither good nor bad, absence of interest or attention

Morose – of bitter and unsociable temper

Pondering – thinking over, muse, meditating, considering, studying, ruminating
General Affect: cont'd:

Sad - appears depressed, melancholic; affect reflects grief, misery or unhappiness

Shallow - of little depth; superficial, trivial

Solemn - weighty, grave, deliberate, serious, somber, sober

Thoughtful - engaged in meditation, reflective, contemplative, pensive

GENERAL MOOD:

Agitated - the patient's mood is charged by excitement; he/she is pressured, overwhelmed and highly stimulated

Anxious - mood is characterized by acute feelings of fear, uncertainty, insecurity, anxiety and a sense of being threatened, produced either by real situations or by intangible, inexpressible fear

Apathetic - emotionally detached and indifferent, showing a lack of animation, concern, interest and responsiveness. This mood may range from a moderate to a severe state

Apprehensive - see Anxious

Bored - refers to a mild degree of emotional detachment indicated by little interest being shown in the ensuing activity or by signs of weariness with indifference to the activity

Calm - mood is placid, serene and tranquil

Changeable - the patient is emotionally labile, exhibiting a wide range of frequently changing moods

Cheerful - indicates good spirits and a resilient, positive emotional tone; may indicate high spirits over the turn of events or achievement of a goal based on reality

Controlled - a conscious limitation of impulses, tendencies, wishes, etc; to suppress instincts and affects

Depressed - expressive of generalized grief, loneliness and unhappiness accompanied by gloomy, pessimistic thoughts and a sense of dejection. The patient lacks emotional resilience, and a response to stimuli may be dulled
General Mood: cont'd:

Despondent - indicates a deep emotional despair characterized by a sense of discouragement, failure, hopelessness, rejection and worthlessness. The patient may show signs of a hopeless resignation to his situation or may verbally affirm that he/she feels there is no use in trying to improve his condition and that life is not worthwhile.

Elated - refers to a high degree of excitement and euphoria of pathological origin in which the patient may be expansive, feels he/she is invulnerable and may claim that he/she has never felt better in his/her life.

Excited - move to strong emotion; roused up; stirred up

Fearful - mood reflects feelings of anxiety, apprehension, fright, strain and tension

Guilt feelings - the patient's mood is highly coloured by an oppressive sense of his/her own guilt, evil, worthlessness, failure and uncleanness. His/her speech may be filled with accusations, assertions of being "no good" and deserving of blame and punishment, or that his/her illness is punishment for some alleged evil.

Inappropriate - mood is unsuited to the prevailing stimuli or environment, being entirely out of character with the usual response which the situation would elicit.

Mood - a feeling tone experienced internally and reported by the subject

Optimistic - mood reflects a feeling of hopefulness and positive outlook regarding the future

Perplexed - the patient tends to be full of doubt or uncertainty, confused and puzzled

Preoccupied - refers to a state of day dreaming or fantasy in which the patient appears to be out of touch with his/her surroundings and is absorbed in his/her own thoughts

Sad - see Depressed

Shallow - of little depth, superficial or trivial

Stable - absence of mood swings; feelings indicate calm, emotional resonance, steadiness and appropriate acceptance of prevailing situation
General Mood: cont'd:

Sullen - patient tends to be cantankerous, contentious, crabby, cranky, disagreeable, grouchy, ill-tempered, morose, sullen, surly, and in general displays feelings of bitterness, negativism and resentment.

Tearful - on verge of tears, in tears, weeping

MOTOR ACTIVITY:

Automatisms - an automatic or unconscious action, such as a tic

Awkwardness of movements - bungling, clumsy or ungainly movements

Bizarre - marked by extreme contrasts, odd in manner, unexpected, unbelievable

Busy - movements are characterised by much action or motion

Fumbling - movements are awkward, clumsy or unskilled

Gait - manner of walking, carriage

Gestures - significant movements of body or limb

Inhibited - confining or restraining of an impulse

Initiative - to admit or introduce; taking the first step or lead

Jerky - movements indicated impaired motor co-ordination ranging from fine muscle tremors to spontaneous jerking

Maniacal flight - "madness" characterized by violent and unrestrained behaviour

Perseveration - frequent repetition of an activity, a verbal expression or a mannerism

Rapidity - acting, moving in a short time

Restlessness - feeling fidgety, never still, unsettled

Retardation - slowness of response or slowing down of thinking and/or a decrease in psychomotor activity
Motor Activity: cont'd:

Stupor - absence of spontaneous movement, rigidity
Tremulous - see Jerky
Unsteady - refers to gait or other movements which are awkward, clumsy, unco-ordinated or wobbly

POSTURE:

Changing - movements undergo many manoeuvres
Constrained - held back, restrained
Co-ordinated - movements exhibit a normal degree of flexibility and harmony with no sign of impaired motor control
Erect - gait and other movements appear leaning, non-bending, stiff, straight, unlifted or upright
Manneristic - movements include exaggerated, recurring, stereotyped gestures or mannerisms
Passive - inactive
Posing - assuming an attitude of body or mind; trying to give an exaggerated or false impression of one's character
Recumbent - lying down
Relaxed - muscles are loose, less firm or tense
Rigid - gait and other movements appear stiff and puppet-like, indicating a severe lack of flexibility
Stereotyped posture - patient assumes an unvarying form or fixed pattern of movement
Stiff - movements appear firm, hard to bend, inflexible, rigid
Symbolic posture - patient assumes and maintains a certain stance or position for an extended period of time
Tense - movements and muscular control indicate a general feeling of nervous tension characterised by motor-co-ordination which may range from being slightly rigid to slightly excessive
Voluntary - acting in a specified capacity willingly or of one's own accord
**SPEECH**

**FORM:**

- **Blocking** - the patient stops talking quite unexpectedly when his conversation has been free flowing and in the absence of anxiety
- **Circumstantial** - patient makes irrelevant, useless or even bizarre statements
- **Clanging** - an association based on similarity of sound, without regard for differences in meaning
- **Clear** - follows an orderly grammatical pattern, is appropriately used and is easily understandable both in meaning and enunciation
- **Concise** - see Clear
- **Confabulatory** - the patient invents stories concerning his/her recent past as a play to conceal memory defects
- **Disjointed** - speech lacks coherence, organization and intelligible meaning; may consist of phrases and words which are garbled, nonsensical, vague or include neologisms and word salad. Speech pattern may be broken by irregular interruptions, blocking, or halting
- **Echolaliative** - the patient repeats words or sentences spoken by someone else
- **Flight of Ideas** - thinking and speaking characterized by rapid and frequent changes in subject
- **Hesitant** - feel or show indecision
- **Illogical** - see Disjointed
- **Incoherent** - the patient's grammar is distorted; he/she answers beside the point, uses obscure phrases, shifts topics, or there is a lack of logical connection between one part of the sentence or between one sentence and the next
- **Initiates** - verbalization follows a normal pattern in which one is capable of beginning a conversation and of responding spontaneously
Speech: cont'd:

Form:

Irrelevant - having no relation to
Logical - see Clear
Monosyllabic - verbal response is limited to one syllable words often consisting of a simple "yes" or "no"
Neologistic - a newly coined word whose meaning is only known to the patient using it
Perseveration - frequent repetition of an activity, a verbal expression or a mannerism
Profane - language is blasphemous, foul, suggestive; consisting of cursing and scurrilous verbal attacks against God, individuals, society
Rambling - refers to the tendency to drift or wander from the subject of conversation or to talk past the point by including many irrelevant meaningless accounts, details and recollections
Repetitive - speech consists of echoing what others have said or of prolonged monotonous repetition of meaningless or disjointed phrases or words
Scattered - moderately incoherent speech - the thoughts do not follow a logical sequence
Tangential - a type of association disturbance in which thought and speech digress from the topic of the moment so that they appear unrelated or irrelevant
Uncommunicative - patient is capable of verbal communication but is not disposed to talk, will not initiate conversation and often will refuse to respond or impart information unless pressure is brought to bear
Verbigeration - abnormal repetition of meaningless phrases and words

QUALITY:

Abrasive - irritating
Speech: cont'd:

Quality:

Abusive - language is of an extremely derogatory nature consisting of verbal attacks against specific individuals or against society or circumstances in general; includes accusations, biting criticisms, declamations, denunciations, name calling, threats, etc.

Bitter - causing, feeling or showing mental pain; relentless, virulent

Declatory - to deliver or make a speech or oratory

Dramatic - theatrical

Evasive - patient avoids situations where communication is expected

Excessive - immoderate or outrageous behaviour, extreme degree

Flighty - words are associated together inappropriately because of their meaning or rhyme so that speech loses its aim and the patient wanders from his original theme

Garrulous - patient is exceedingly talkative and wordy

Grandiose - speech is characterized by absurd exaggeration and affectations of grandeur; patient may exhibit an overbearing attitude, a haughty air, "talk down" to others and attempt to monopolize and control the conversation

Immature - verbalization is nonsensical, childish, exhibiting shallowness and superficiality of reasoning

Jocular - refers to verbalization, characterized by display of wit, joking, laughter, playfulness, puns, quips, wise-cracks and jests of a flippant nature but intended to amuse - not to offend or harm

Logical - follows an orderly pattern, is appropriately used and is easily understandable both in enunciation and meaning

Monotone - tone is expressionless, flat and monotonous because of a lack of normal voice inflection

Mumbling - incessant or frequent muttering in a low indistinct voice and in a confused and incoherent way, usually directed at no one in particular
Quality: cont'd:

Rhyming - identifying sounds between extending from the end to the last fully accented vowel and not farther (great and deceit)

Sarcastic - verbalization is characterized by the frequent use of caustically barbed, contemptuous, critical remarks

Silly - see Immature

Slurring - making continuous or running into

Stuttering - to speak with checks and repetitions of certain sounds

Verbose - patient uses more words than are needed to convey a meaning

Whiny - speech and tone are highly suggestive of a fretful, self-pitying attitude being markedly complaintive, plaintive and querulous

Whispered - speech is barely audible and difficult to hear, low, weak

Witty - see Jocular

Word Salad - verbal expressions, including neologisms, that are meaningless to the observer

RATE:

Accelerated - tempo of speech is rapid giving the impression that the patient feels hurried and pushed under great pressure of speech

Even - level, smooth, uniform in quality, equally balanced

Hurried - undue haste; eagerness

Labourred - having difficulty in maintaining normal motion

Leisurely - deliberate and not hurried

Mute - absence of speech
**Rate: cont'd:**

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressured</td>
<td>copious verbal production that is difficult for the listener to interpret</td>
</tr>
<tr>
<td>Rapid</td>
<td>patient's flow of speech is incessant or difficult to stop, to the degree where others can scarcely get a &quot;word in edge-wise&quot;</td>
</tr>
<tr>
<td>Relaxed</td>
<td>loosened up, easy</td>
</tr>
<tr>
<td>Retarded</td>
<td>flow of speech is slowed, deliberation, laboured, marked by hesitancy, prolonged stammering and stuttering and in general a severe deficiency in the ability to form and say words</td>
</tr>
<tr>
<td>Slowed</td>
<td>delayed, prolonged, lingering, retarded, hesitent, lagging</td>
</tr>
<tr>
<td>Strained</td>
<td>pressured, stressed, burdened, under tension</td>
</tr>
</tbody>
</table>
EMOTIONAL STATE

MOOD:

Mood - a feeling tone experienced internally by the subject

AFFECT:

Affect - the feeling tone accompanying an idea
Agitation - a tension state in which anxiety is manifested in the psychomotor area with hyperactivity and general perturbation
Alert - patient maintains suitable interest in and contact with those around him/her and with his/her environment, either actively or passively
Anergia - the patient feels that he/she has been slowed down in movement and/or has been markedly lacking in energy compared to his/her usual condition
Angry - reflective of any strong expression of adverse feeling such as anger, hate, obstructiveness, resentment, resistance, etc.
Apathetic - without feeling, listless
Apprehension - anxiety related to fear of some future event
Bewildered - used to describe the lost, dazed, perplexed, puzzled patient who appears to be confused but shows a sort of numb apathy about his confusion
Blank - void of interest or expression; an empty surface; has no impressions
Bluntness - dulled; an "under" response
Boastful - brag; fact, thing, one is proud of
Bright - shining, brilliant, vivid, vivacious
Changeable - becoming different
Affect: cont'd:

Complacent  - self-satisfied, in a pleasant mood
Composed  - bring one's thoughts or feelings to tranquility
Confused  - a state of disordered orientation; mixed up or not knowing which is which
Controlled  - restrained, dominated, managed
Decreased interest  - intellectual behaviour shows signs of a gradually diminishing awareness of, response to, and concern about others, employment, activities and surroundings, indicative of varying degrees of recession into a state of mental and emotional detachment
Depressed  - a clinical syndrome consisting of lowering of mood-tone, difficulty in thinking and psychomotor retardation
Elasted  - consisting of feelings of euphoria, triumph, intense self-satisfaction, optimism
Exhuberant  - high-spirited, enthusiastic, exhilarated, elated, zestful
Flat  - general impoverishment of emotional reactivity or failure to react appropriately; emotionally bleak, dull, colorless, unresponsive, cold, removed, uninvolved, unconvincing
Forgetful  - refers to general absent-mindedness, slight lapses of memory or failure to notice and remember various details, occurrences, and location of things. Does not include severe memory impairment with loss of recollection of recent and remote events
Happy  - content, glad
Hopeless  - feeling no expectation or desire
Hostile  - opposed; of an enemy
Immature  - thinking is on a childish, superficial level showing absence of insight and foresight; inability to reason or to deal with information on a mature level. The ability to generalize or think in abstract terms is impaired and the patient can think only in terms of concrete items which appear in the immediate stimuli
Indifferent  - impartial; having no inclination for or against
### Affect: cont'd:

<table>
<thead>
<tr>
<th>Affect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irritable</td>
<td>easily annoyed, angered, excited</td>
</tr>
<tr>
<td>Labile</td>
<td>characterized by free and usually uncontrolled expression of the emotions</td>
</tr>
<tr>
<td>Morose</td>
<td>of bitter and unsociable temper</td>
</tr>
<tr>
<td>Pondering</td>
<td>thinking over, muse, meditating, considering studying, ruminating</td>
</tr>
<tr>
<td>Retarded</td>
<td>slow and laborious thinking is evident, indicating a decrease in the speed of</td>
</tr>
<tr>
<td></td>
<td>thought, reasoning and flow of ideas but not in their continuity or</td>
</tr>
<tr>
<td></td>
<td>organization</td>
</tr>
<tr>
<td>Sad</td>
<td>sorrowful, showing or causing sorrow</td>
</tr>
<tr>
<td>Shallow</td>
<td>of little depth; superficial, trivial</td>
</tr>
<tr>
<td>Solemn</td>
<td>weighty, grave, deliberate, serious, somber, sober</td>
</tr>
<tr>
<td>Thoughtful</td>
<td>engaged in meditation, reflective, contemplative, pensive</td>
</tr>
<tr>
<td>Unstable</td>
<td>not constant, vacillating; inability to control the emotions</td>
</tr>
</tbody>
</table>
THOUGHT PROCESSES AND CONTENT

INDICATORS:

Comprehension - intellectual impairment in which the patient shows diminished ability to reason or to grasp and understand the meaning and significance of things, particularly those dealing with abstractions

Derailment - abnormal deviation or disorganization of psychic processes

Dissociation - segregation of any group of mental processes from the rest of the psychic apparatus

Limited attention span - the patients' attention span is noticeably limited so that he/she cannot sustain any prolonged interest in the activity at hand; he/she is easily distracted by competing stimuli or because of inability or unwillingness to focus his/her mind on a particular subject or object

Poverty of content of speech - the patient talks fairly freely, but so vaguely that no information is given, in spite of the number of words used

DELUSIONS:

Delusions - a false idea or belief that cannot be changed to logical reasoning or contrary evidence; a product of irrational thinking rather than mere ignorance

Thought broadcasting - the patient experiences that his/her own thoughts seem to sound aloud in his/her head, almost as though someone standing nearby could hear them

Thought echo - the patient experiences his/her own thoughts as repeated or echoed with very little interval between the original and the echo

Thought insertion - the patient experiences thoughts which are not his/her own intruding into his/her mind. The symptom is not that he/she has been caused to have unusual thoughts, but that the thoughts themselves are not his/hers
Delusions: cont'd:

Thought blocking - the patient experiences a sudden stopping of his/her thoughts, quite unexpectedly while they are flowing free and in the absence of anxiety. It is fairly dramatic and happens on several occasions.

DREAMS:

Dreams - fantasies that take place during sleep; a normal phenomenon.

Hypnagogic phenomena - dream-like experiences occurring in twilight states between falling asleep and sleep and between sleep and waking up.

EXPANSIVE TRENDS:

Expansiveness - a tendency toward exaggerated self-importance, euphoria.

Grandiosity - characterized by showing feelings of great importance, delusions of wealth.

FEELINGS OF UNREALITY:

Autistic - thinking is entirely governed by internal states to the complete exclusion or reference to external validity.

Changed perception - the patient's perception of time seems to change, so that events appear to move very slowly or very rapidly or to change their tempo or to be completely timeless.

Depersonalisation - a state in which the patient has distorted ideas of his/her own body or being. It is often expressed as ideas of one's own body not belonging to oneself, that one is standing apart, observing him/herself in action, or that the body is changing in some bizarre way.
Feelings of Unreality:

Derealization - a feeling that the world is strange, different and unreal

Dulled perceptions - the patient perceives things are dark or grey, uniform and uninteresting and flat. Tastes and appetites are blunted, colours may appear to be muddy or dirty, sounds to be ugly or impure

Heightened perceptions - sounds seem unnaturally clear, intense or loud; colours appear more brilliant or beautiful, details of the environment seem to stand out in a particularly interesting way, and any sensation may be experienced exceptionally vividly

Unreality - the feeling that one's self or one's surroundings are not real

hallucinations:

Hallucinations - a false perception without an external stimulus

Gustatory - to do with taste

Olfactory - to do with smell

Illusions:

Illusions - a false perception of an external stimulus

Obsessions/Compulsions:

Compulsion - the performance of an unreasonable act, usually repetitious, that seems contrary to the patient's better judgement and that he/she is unable to control

Conscientious - scrupulous
Obsessions/Compulsions: cont'd:

- Obsession - a painful, unwelcome and persistent idea, emotion or urge
- Perfectionistic - exact, faultless, precise
- Rigid - harsh, inflexible, strict

PERSECUTORY TRENDS:

- Ideas of reference - the patient cannot help feeling that people take notice of him/her in buses, in a restaurant, or in other public places - and that they observe things about him/her that he/she would prefer not to be seen
  - false ideas that other people are directing/controlling their activities, attention, or thoughts upon oneself
- Paranoia - a fixed delusional state, usually of a persecutory nature. Hallucinations are usually absent, and client's thinking remains clear and orderly
- Persecutory trends - the patient feels that the world is against him/her; patient who feels sorry for him/herself

SOMATIC TRENDS:

- Hypochondriasis - morbid attention to the details of body functioning and/or exaggeration of any symptom, no matter how insignificant
- Somatization - the development of illness or symptoms of illness which, it is suspected, is due to the effect of rage, fear or other stresses on bodily processes
Insight  - the patient's knowledge that the symptoms of his illness are abnormalities or morbid phenomena

Judgement  - the ability to recognize the true relations of ideas; to draw correct conclusions from the material acquired by experience

Logical  - the patient displays a degree of understanding and comprehension suited to his/her particular level of intelligence; thought processes show a suitable degree of logical organization with no obvious signs of impairment

Memory loss  - recent and remote; refers to defects of memory involving loss of recollection of events which have occurred within the same and preceding days, (recent loss) or events which have transpired months or years previously (remote loss). If these periods of memory loss tend to merge with no clear-cut distinction, one may assume that there is some degree of memory loss in both

Poor concentration  - cognitive processes are dulled so that the patient cannot deal at any length or depth with matters requiring intellectual consideration
INSTRUCTIONS FOR USE OF COMPUTER SIMULATION EXERCISE

This appendix is intended to help you use the I.B.M. computer terminal. It is located in the computer room of the psychology department - main floor of Health Sciences Centre Psychiatric Unit.

Please follow the instructions carefully. The computer demands you follow its instructions EXACTLY the way it expects so, to avoid difficulties, take time to read the following pages. Take them, and the learning module, with you when you are ready to begin your nurse/patient simulation exercise.

INTRODUCTION:

In order to communicate with the computer, you need to learn a set of commands that the computer can understand.

The following are some important pieces of information you will need to know:

(a) "#" means you are in the MTS system (a standard system for all terminals at U.B.C.). Wait for the "#" sign to appear before starting to type each line (except the password line).

(b) "#Enter password" means you are to type the password CAI (these 3 letters will be blanked out on the screen).

(c) Never put in more blank spaces than is specified. Remember - the computer expects you to follow instructions TO THE LETTER!

(d) As soon as you push RETURN, you are unable to enter any more information. The computer automatically reacts to the information you have entered.

(e) During the simulation exercise, ***** will appear on the screen when you are expected to input information. This is the time you either:

1. enter your answer to a question

OR

2. if you wish to interrupt the program (and come back to it another time), then type "signoff" and press RETURN.
(f) there are two keys at the right of the keyboard with horizontal arrows on them; one arrow points left, one arrow points right. These keys control the movement of the cursor. Use them if you wish to correct spelling mistakes or change the information you have entered.

(g) the "SHIFT" key allows you to capitalize (or obtain upper case).

(h) "RETURN" is the carriage return and sends the line you have entered to the computer.

(i) the "SPACE BAR" at the bottom of the terminal creates blank spaces (just as with a typewriter).

(j) When you have completed the simulation exercise, you will input "SIGNOFF" to sign off the computer. However, a record of your scores will be retained by the computer to assist in data analysis.

(k) After you have signed onto MTS (and before you run the computer simulation exercise), make sure the computer is operating at the proper speed. This is done by inputing after "#":

   %rate=10

These are the most important points for you to be aware of before sitting down to the nurse/patient computer simulation exercise.

**NOW! TO BEGIN:**

1. Sit down at the terminal with:

   1. your learning module
   2. the preceeding instructions

2. Push the RETURN key

3. Type in after # appears:

   signon kerv

   (Very good! - now push RETURN)
4. "#Enter Password" will now appear. Following the "?", type in:  
   
   cai (Remember, this will not show on the screen)  
   
   Now push RETURN  

5. Following "#", type in:  
   
   %rate=10  
   
   Push RETURN (this too will disappear from the screen)  

6. Following "#", type in:  
   
   run cal:cal par=student mse  
   
   Push RETURN  

   GOOD LUCK!  

8. To sign off, type the following:  
   
   (a) after "=" type: signoff (now push RETURN)  

   Please complete the POST-TEST 1 before beginning the nurse-patient simulation exercise. You will find POST-TEST 1 at the back of your learning module on Mental Status Examination. Hand it in when you attend your computer assisted instruction session. Following this session, you will be given POST-TEST 2. See you then!  

   - Sharon Kervin
REFERENCES


APPENDIX B

Computer Assisted Instruction Simulation Exercise
The following CAI simulation exercise was written using an authoring language called COURSEWRITER. The text of this exercise focusses on a mental status examination. The learner is supplied with five possible options to a situation—the text flows from these options in various "frames."

The capital letters and numbers at the beginning of each statement correspond to operation codes and commands. They enable the lesson to, for example, ask questions, branch to a specific text, and/or provide feedback messages.
Welcome to the Mental Status Examination patient simulation. What is your name?

You have just completed the learning module on Mental Status Examination. You will now apply this information in a computer simulation exercise. Only the first two parts of a M.S.E. will be examined. This will help you meet the fourth objective stated in your learning module.

Deal with the terminal as you would a typewriter - but remember - you must press RETURN after each response.

If, for some reason, you must stop, enter signoff when five ***** appear on the screen. This will sign you off the computer.

Now, when you are ready to begin, press RETURN.

---

You arrive at work to find a new patient on the psychiatric ward. She is an involuntary admission and is accompanied by her family. A referral letter from a psychiatrist accompanies the patient. It is your responsibility to conduct a Mental Status Examination. What do you do now?

The following options are available to you:

1. Read the 3 page referral letter to gain some information about your new client.
2. Introduce yourself to the patient and family and begin an informal and non-threatening conversation.
3. Introduce yourself and ask to speak privately to the family.
4. After introductions, allow the patient and her family to visit privately for an hour.
5. Introduce yourself briefly, ask the family to leave, and observe your patient's behaviour during the next few hours.

QU Type in the NUMBER of your choice and press RETURN.

TY WA 1/ONE
TY The referral letter identifies the patient as Miss Nelson - a 22 year old caucasian female. She has a history of uni-polar manic depressive illness - currently manic phase. She is also a high elopement risk.

To check on your patient, press RETURN.

EP TY Miss Nelson is nowhere to be found. She has gone A.W.O.L. while you have been reading the referral letter.

You must now:
1. Inform the attending, on-call and private psychiatrists.
2. Inform the head nurse and nursing supervisor.
3. Complete an Accident-Incident form.
4. Phone the R.C.M.P. and city police and ask that a warrant for Miss Nelson be issued. This will be difficult as you are unable to give a description of your patient!
5. Talk to the Nelsons' and reassure them (as much as possible) about the fate of their daughter.

Obviously, & this was not the best method that you could have chosen. Try again by pressing RETURN.

EP
BR BEGIN
CA 2/TWO
TY A good choice, &./B5
BR PRO
CA 3/THREE
TY Well done, &./B5
BR ANS3
CA 4/FOUR
TY An interesting choice, &./B5
BR ANS4
AA 5/FIVE/five/Five
TY This is one way to begin, I suppose. Let's see what happens, &./B5
BR ANS5
UN B2
& you have been asked to answer by typing the NUMBER/B5
TY (either 1, 2, 3, 4 or 5) of your choice.
PR
TY Following introductions, your patient (Miss Nelson) dominates the conversation in an overbearing, demanding and self-centered manner.

I'm glad, & you realize that these first impressions of Miss/B5 Nelson are part of a General Appearance and Behaviour section of a
Mental Status Examination.

The following list gives three possible headings for your first impressions.

A. BEHAVIOUR
B. GENERAL MOOD
C. ATTITUDE

Type in the letter (either A, B or C) that describes the most appropriate heading and press RETURN.

Almost, &. It is Miss Nelson's manner and personality that is perceived as overbearing; her specific behaviour is not described.

The item 'General Mood' refers to an overall feeling or emotional state.

Well done, &! Your first impressions of the patient, that of her being demanding and overbearing, are indicative of her attitude. As you recall, attitude is one aspect of Miss Nelson's General Appearance and Behaviour.

Her parents inform you that she has had previous hospitalizations for "extremely high energy" and over active behaviour; she is currently displaying these same symptoms.

To continue, press RETURN.

Before leaving your patient to read the referral letter, you decide to complete the first part of a Mental Status Examination (that of General Appearance and Behaviour).

No, &. Choose again.

You need to choose either A, B, or C. Try again.

The following list outlines various items that you may assess in order to complete the General Appearance and Behaviour section.

Choose, one number at a time, those items that you wish to include in your General Appearance and Behaviour assessment. Following each number you type, press RETURN to obtain your data and observations for each item.

When you are ready to see how you have done, type END to exit and press RETURN. You will then learn if you have chosen correctly, &.
TY

1. Attitude
2. Behaviour
3. Condition of dress and grooming
4. Facial expression
5. Speech
6. General mood and affect
7. Motor activity
8. Posture

PR
AA 1/one/ONE/ATTITUDE/Attitude
GO S1/A1
TY Miss Nelson's attitude has previously been found to be demanding, over-bearing & self-centered. Choose again, or type END to exit and press RETURN.

ON S1
BR T
LABEL=A1
TY You have already observed attitude.

BR T
AA 2/two/TWO/BEHAVIOUR/behaviour/Behaviour
GO S2/A2
TY During the conversation, you observe that Miss Nelson has not yet sat down, but paces the room. She refuses to tell you about her life-style prior to hospitalization. On the ward, Miss Nelson seeks out any form of stimulation; these activities are of short duration. Choose again, or type END to exit and press RETURN.

ON S2
BR T
LABEL=A2
TY You have already observed behaviour, &./B5

BR T
AA 3/three/Three/THREE/condition of dress and grooming
GO S3/A3
TY Miss Nelson is over-dressed in bright and conflicting colours. She wears an abundance of jewellery and gaudy makeup. Choose again, or type END to exit and press RETURN.

ON S3
BR T
LABEL=A3
TY You have already observed Condition of dress and grooming.

BR T
AA 4/four/Four/FOUR/Facial expression/facial expression
GO S4/A4
TY Miss Nelson's facial expression alternates between anger and elation. It is often inappropriate to the topic. Choose again, or type END to exit and press RETURN.

ON S4
BR T
LABEL=A4
TY You have already observed facial expression.

BR T
Your observations tell you Miss Nelson's mood is agitated; she fluctuates rapidly between inappropriate elation and anger. You also note that her agitation is increasing. She denies this, saying "I feel great!". This information will be passed on to the attending psychiatrist.

Choose again, or type END to exit and press RETURN.

You have already assessed general mood and affect.

Miss Nelson is very over-active and tremulous. She finds it increasingly difficult to sit still.

Choose again, or type END to exit and press RETURN.

You have already chosen motor activity

During your meeting with Miss Nelson she appears tense; sometimes even rigid and constrained.

Choose again, or type END to exit and press RETURN.

You have already observed posture

Speech is an important patient characteristic to assess, however it is not included in a General Appearance and Behaviour section.

Choose again, or type END to exit and press RETURN.

You have already chosen speech

Miss Nelson's ATTITUDE was observed in your first impressions.
I'm glad you validated your observation of ATTITUDE, &.

You should have assessed BEHAVIOUR. It is an integral part of a mental status examination.

BEHAVIOUR was a good choice, &

This is an integral part of a patient's mental status, and can give you a lot of information.

Why did you not observe Miss Nelson's DRESS AND GROOMING? This is easy to do, and can be an indicator of her functioning level and self-esteem.

I'm pleased you assessed Miss Nelson's DRESS AND GROOMING. This is easy to do, and can be an indicator of her functioning level and self-esteem.

You did not wish to assess Miss Nelson's FACIAL EXPRESSION. Too bad; one's affect can give you information about one's emotional state.

A good choice, &. FACIAL EXPRESSION can give you some information regarding your patient's emotional state.

CORRECT, &! It would seem (by observing Miss Nelson's MOTOR ACTIVITY. And it would have been so easy! You have missed an important observation.
MOTOR ACTIVITY), that she is quite agitated. This is something you need to be aware of.

LABEL=B7END
GO S8/B8
TY You did not observe Miss Nelson's POSTURE. Perhaps you have missed something!

BR B8END
LABEL=B8
TY Even though assessing POSTURE has not told you very much, you have been very thorough.

LABEL=B8END
GO S5/B5
TY Well done! I'm sure you realize that SPEECH is not part of the General Appearance and Behaviour section of a M.S.E. To continue, press RETURN.

EP
TY
BR B5END
LABEL=B5
TY Speech is an important patient characteristic to assess, however it is not included in the GENERAL APPEARANCE AND BEHAVIOUR section. This will be assessed later in this simulation exercise. For now, concentrate on just the patients general demeanor.
To continue, press RETURN.

EP
TY
LABEL=B5END
PR
LABEL=END1
TY You have just completed the first part of a Mental Status Examination using interviewing and observation skills as well as a non-threatening approach. The second part of a Mental Status Examination will now be assessed. As you are aware, this is SPEECH.

BR BEGIN2
LABEL=ANS3
PR
TY Your patient, Miss Nelson, agrees to wait in her room while you have a private conversation with her parents. When ready, press the RETURN key to obtain the information you learn from this 20 minute interview.

EP
TY The Nelson's tell you that their 22 year old daughter has had previous periods of over-active and irresponsible behaviour that has required previous hospitalizations. Currently, she is hyperactive, displays poor judgement (such as charging $3,000 worth of clothes in one afternoon), is angry and hostile one minute and elated the next, is currently demanding and overbearing (highly unlike her), and ran away from her previous hospital.

PR
TY
QU Do you wish to take 15 more minutes to interview the Nelson's in the hope of gaining more information? Answer "YES" or "NO" and press RETURN.
CA NO/FALSE
You and the Nelson's return to find your patient in a hat and coat, extremely agitated and angry at being left alone. She also appears somewhat frightened. Although she responds to you in an angry and hostile manner, her behaviour calms somewhat and she is able to be included in an easy-going and non-threatening conversation. To continue, press RETURN.

They tell you more about their daughter's "high strung" nature and her inherited ability to, one day, be a great actress. They feel her resistance to treatment is simply an expression of her "free" nature (such as her overly bright and mismatched clothes).

You have now gained all possible information to include in the General Appearance and Behaviour section of your patient's Mental Status Exam.

A picture of Miss Nelson comes to mind as an overbearing and demanding woman who fluctuates easily between hostile anger and elation. She dresses in a gaudy and, in your opinion, inappropriate manner. Her behaviour is overactive and, at times, irresponsible. You terminate the interview in order to return to your patient and validate this information (as well as gather additional data). When ready, press RETURN to see what happens next!

You find Miss Nelson's room empty, and she is nowhere on the ward. You must assume she has eloped from the hospital during the interview.

You must now:

1. Inform the attending, on-call and private psychiatrists.
2. Inform the head nurse and nursing supervisor.
3. Write an accident-incident form.
4. Phone the R.C.M.P. and city police and ask that a warrant for Miss Nelson be issued.
5. Talk to the Nelson's and reassure them (as much as possible) about the fate of their daughter.

While you have been interviewing Miss Nelson's parents, you have left a new and unknown patient alone and unsupervised for 35 minutes! To try again, press RETURN.

The following list outlines various items that you may assess in order to complete the General Appearance and Behaviour section.
Choose, one number at a time, those items that you wish to include in your General Appearance and Behaviour assessment. Following each number you type, press RETURN to obtain your data and observations for that item. When you are ready to see how you have done, type END to exit and press RETURN. You will then learn if you have chosen correctly.

LABEL=U
PR
TY
1. Attitude
2. Behaviour
3. Condition of dress and grooming
4. Facial expression
5. Speech
6. General mood and affect
7. Motor activity
8. Posture

PR
AA 1/one/One/ONE/attitude/Attitude/ATTITUDE
GO S9/A9
TY Miss Nelson's parents described their daughter as demanding and overbearing; two characteristics which you observe. Choose again.

ON S9
BR U
LABEL=A9
TY You have already chosen attitude.

BR U
AA 2/two/Two/TWO/Behaviour/BEHAVIOUR/behaviour
GO S10/A10
TY You are now aware of Miss Nelson's hyperactive and irresponsible behaviour. She seeks out stimulation. You also note that she is unable to sit, and paces the room. Choose again, or type END to exit and press RETURN.

ON S10
BR U
LABEL=A10
TY You have already chosen behaviour, &./B5

BR U
AA 3/THREE/DRESS AND GROOMING/CONDITION OF DRESS AND GROOMING
GO S11/A11
TY Miss Nelson is inappropriately dressed in bright and gaudy colours, with much makeup and jewellery. Choose again, or type END to exit and press RETURN.

ON S11
BR U
LABEL=A11
TY You have already chosen condition of dress and grooming.

BR U
AA 4/FOUR/FACIAL EXPRESSION/EXPRESSION
GO S12/A12
TY During the interview, Miss Nelson's inappropriate facial expression
alternates between anger and elation.
Choose again, or type END to exit and press RETURN.

ON S12
BR U
LABEL=A12
TY You have already chosen Facial expression.

BR U
AA 6/SIX/GENERAL MOOD AND AFFECT/MOOD AND AFFECT
GO S13/A13
TY You validate what the Nelson's have told you about their daughter's fluctuating mood. You also note her low frustration level and high degree of agitation. Choose again, or type END to exit and press return, &./B5

ON S13
BR U
LABEL=A13
TY You have already chosen General mood and affect.

BR U
AA 7/seven/Seven/SEVEN/motor activity/Motor activity/MOTOR ACTIVITY
GO S14/A14
TY Miss Nelson's parents have described their daughter's hyperactivity. In addition, you observe that her hands are tremulous. Choose again, or type END to exit and press RETURN.

ON S14
BR U
LABEL=A14
TY You have already chosen Motor activity

BR U
AA 8/eight/EIGHT/Posture/POSTURE
GO S15/A15
TY During you meeting with Miss Nelson, her posture remained tense, erect and rigid. Choose again, or type END and press RETURN.

ON S15
BR U
LABEL=A15
TY You have already chosen Posture

BR U
WA 5/five/FIVE/SPEECH/Speech
GO S16/A16
TY Speech is an important patient characteristic to assess, however it is not included in a General Appearance and Behaviour Section. For now, &, focus only on this section./B5 Choose again, or type END to exit and press RETURN.

ON S16
BR U
LABEL=A16
TY You have already chosen Speech.

BR U
AA END/end/End/Final/Finish
BR PRO
Remember, &. Type in the NUMBER(1 - 8) of your choice./B5

TY Miss Nelson's ATTITUDE was observed in your first impressions. You should have validated it, &./B5

TY I'm glad you validated your observations of ATTITUDE,/B5

TY You should have assessed Miss Nelson's BEHAVIOUR. It is an integral part of a Mental Status Examination, and is very easy to do.

TY Assessing BEHAVIOUR was a very good choice! This is an integral part of a Mental Status Examination.

TY You did not observe Miss Nelson's DRESS AND GROOMING! Too bad. This is easy to do, and can be an indicator of her functioning level and self-esteem.

TY I'm pleased you assessed Miss Nelson's DRESS AND GROOMING. This is easy to do, and can be an indicator of her functioning level and self-esteem.

TY You did not wish to assess Miss Nelson's FACIAL EXPRESSION. One's affect can give you information about one's emotional state.

To continue, press RETURN.

TY A good choice, &. FACIAL EXPRESSION can give you some very important information regarding your patient's emotional state. To continue, press RETURN.

TY Always assess a patients' GENERAL MOOD & AFFECT. It is an overall indicator of his or her emotional state. If you had done this, you would have found a patient who is becoming increasingly agitated!

TY I am glad you chose to assess Miss Nelson's GENERAL MOOD AND AFFECT. Well Done! *And you have come up with some very valuable
information (Her high degree of agitation)!

LABEL=B13END
GO S14/B14
TY I'm sorry that you did not choose to assess Miss Nelson's MOTOR ACTIVITY. And it would have been so easy! You have missed an important observation.

BR B14END
LABEL=B14
TY MOTOR ACTIVITY is a good choice, &. It would seem that Miss Nelson is agitated. This is something you need to be aware of.

LABEL=B14END
GO S15/B15
TY You chose not to assess Miss Nelson's POSTURE, &. Although this is not a drastic error, perhaps you have missed a valuable piece of information!

BR B15END
LABEL=B15
TY Even though assessing POSTURE has not told you very much, you have been very thorough, &.

LABEL=B15END
GO S16/B16
TY I'm sure the reason you chose NOT to assess your patient's SPEECH was that you realize it is not part of the General Appearance and Behaviour section of a Mental Status Exam. It will be included in the next patient simulation. To continue, please press RETURN.

EP

TY Don't try and do everything at once!!! SPEECH will be included in the next section of this simulation. To continue, please press RETURN.

EP

LABEL=B16END
PR
BR END1
LABEL=ANS4
PR
TY Following introductions, you agree to your patient Miss Nelson and her parents visiting privately for an hour. DO you wish to use this time to read the referral letter that accompanied Miss Nelson? Answer YES or NO and press Return.

AA yes/Yes/YES
TY You learn that Miss Nelson is a 22 year old caucasian female. She has a history of uni-polar manic depressive illness; currently manic phase. Her behaviour has been very irresponsible and she is a high elopement risk.

BR PR0
WA no/No/NO
TY All right,&. Continue on then./B5
BR PRO
UN Answer Yes or No, &../B5
   Are you sure you are typing YES or NO? Try again.
PR
QU It has now been 30 minutes since you last saw Miss Nelson. Do you
   want to check on her? Answer Yes or No and press Return.
AA yes/Yes/YES
TY Miss Nelson is very agitated. She is hyperactive, tremulous, and
demanding to leave the hospital. She appears very angry. You
usher her parents out (they can return during visiting hours),
and you are able to calm your patient. Miss Nelson agrees to
stay. To continue, press RETURN.
EP
TY
BR TSTART
WA no/NO/N
TY Very well, &. The Nelson family visit for another 15 minutes../B5
BR PRO
UN Answer yes or no, &../B5
   Are you sure you are typing YES or NO? Try again.
PR
QU Do you wish to check on her now? Answer Yes or No and press
   RETURN.
AA yes/Yes/YES
TY Miss Nelson is very agitated. She is hyperactive, tremulous and
demanding to leave the hospital. She appears very angry. You
usher her parents out (they can return during visiting hours),
and you are able to calm your patient. Miss Nelson agrees
to stay.

BR TSTART
WA no/No/NO
TY Your decision, &, has been to allow Miss Nelson and her family to/B5
   visit unsupervised for one hour.

Upon arriving at your patient's room, you discover that she has
run away. Her parents are in a state of extreme agitation.

You must now:

1. Inform the attending, on-call and private
psychiatrists.
2. Inform the head nurse and nursing supervisor.
3. Write out an accident-incident form.
4. Phone the R.C.M.P. and city police and ask that a
warrent for Miss Nelson be issued.
5. Talk to the Nelson's and reassure them (as much
as possible) about the fate of their daughter.

You have left a new and unknown patient alone (and unsupervised)
for one hour. Really, &!/B5
Press RETURN to try again.

EP
BR BEGIN
UN B3
LABEL=ANS5
PR
TY
You meet your new patient, Miss Nelson. After asking her parents to
return during visiting hours, you leave Miss Nelson with the
intent on observing her behaviour over the next few hours.
QU Do you wish to use the next 30 minutes to read the accompanying referral letter? &? Answer Yes or No and press return./B5
AA yes/Yes/YES
TY The referral letter describes Miss Nelson as a 22 year old caucasian female. She has a history of uni-polar manic depressive illness - currently manic phase. Her behaviour has been very irresponsible, such as charging $3,000 worth of clothes in one day and running away from hospitals prior to this admission.

You now decide to "check in" on Miss Nelson. Press RETURN to obtain your observations.

EP
TY Miss Nelson is in her room, exhibiting behaviour of an agitated nature. She is hyperactive, angry and tremulous.
BR PR0
WA no/n/NO
TY Very well, &. 30 minutes have now elapsed and you decide to/B5 look in on your patient. Press RETURN to obtain your observations.

EP
TY Miss Nelson is in her room exhibiting behaviour of an agitated nature. She is hyperactive, angry and tremulous.
BR PR0
UN Answer YES or NO, &. /B5
PR
QU Do you wish to continue simply observing Miss Nelson? Answer Yes or No and press RETURN.
AA no/No/NO
TY A good choice, &. You are able to calm Miss Nelson, thereby/B5 preventing a possible elopement of your patient. You can now begin a MENTAL STATUS EXAMINATION.
BR TSTART
WA yes/YES/ys
TY 30 more minutes elapse and you again return to Miss Nelson. She is extremely agitated; unable to sit, angry and threatening to leave hospital.

BR PR0
UN B2
PR
QU Do you wish to continue to privately observe Miss Nelson's behaviour? Answer yes or no and press RETURN.
AA no/No/NO
TY A good move, &! You are able to calm Miss Nelson and she agrees/B5 to stay in hospital. You can now begin your MENTAL STATUS EXAM.
BR TSTART
WB Yes/yes/YES
TY Another 30 minutes go by. When you next look in on Miss Nelson, you find an empty room. She has run away from hospital!

You must now:
1. Inform the attending, on call and private psychiatrists
2. Inform the head nurse and nursing supervisor.
3. Write an accident-incident form
4. Phone the R.C.M.P. and city police and ask that a warrant for Miss Nelson be issued.
5. Phone the Nelson's and reassure them, as much as possible, about the fate of their daughter.

While you have been "privately observing", a new, unknown and agitated patient has been alone and unsupervised. This was not the best choice you could have made, &./B5

Press RETURN to try again.

As you recall, there are THREE elements to be aware of when assessing one's speech. Two elements are FORM and RATE. Type in the third choice, then press RETURN to see if you are right.

That's right, QUALITY! You are now ready to begin your assessment of Miss Nelson's SPEECH. Take some time to gather additional information on your patient.

This is incorrect, &. You have been given two elements of speech. Check your learning module to find the third.

Are you sure your spelling is correct? Try again.

A good choice, &. You learn that Miss Nelson has a history of manic episodes where she becomes irresponsible and unable to care for herself. She has run away from previous hospitals. She is currently exhibiting similar behaviour to that of her previous manic episodes; she is grandiose, eats little, is unable to set limits for herself, and her behaviour is erratic and unstable. To continue with your Mental Status Examination, press RETURN.

The other nurses are unable to give you any information. Examine the list and choose again.

Please choose either 1, 2, 3 or 4.

During your casual conversation with Miss Nelson, you obtain information for your assessment of her SPEECH pattern.
The data you obtain is as follows:

SPEECH FORM - disjointed, illogical, scattered
SPEECH QUALITY - abusive, dramatic, grandiose
SPEECH RATE - pressured, accelerated, rapid

You have now gathered important information regarding Miss Nelson's General Appearance and Behaviour and Speech.

Your task is to produce a short and concise description of Miss Nelson. Remember to focus only on the first two parts of a Mental Status Examination. Obviously all of the information you have attained is not relevant. INCLUDE ONLY THOSE ITEMS YOU FEEL ARE MOST IMPORTANT. Be sure to identify the data you decide to include with its appropriate label. Type 1 sentence describing each item. The sentence should be no longer than one line. Here is an example:

Miss Nelson's attitude was overbearing and demanding.

Now, & press RETURN for a list of your observations/B5

EP
TY
LABEL=HSTART
PR
OF S17
OF S18
OF S19
OF S20
OF S21
OF S22
OF S23
OF S24
PR
LABEL=H
PR
TY
QU
ATTITUDE - overbearing, demanding, self-centered
BEHAVIOUR - unable to sit, paces, busy with activities
- seeks out stimulation
DRESS AND GROOMING - over-dressed, bright colours
- much jewellery and gaudy makeup
FACIAL EXPRESSION - inappropriate to topic; labile
GENERAL MOOD - increasing agitation, labile mood
AND - changes from elation to anger
AFFECT - states feels "great!"
MOTOR ACTIVITY - overactive, tremulous, unable to sit
POSTURE - tense, rigid
SPEECH - disjointed, grandiose, pressured

TY
PR
QU
TY
AA &ATTITUDE&
GO S17/A17
TY Well done! Miss Nelson's attitude is an important piece of information to include. Choose again, or type END to exit and press RETURN.
ON S17
BR H
You have already chosen attitude.

You seem to know your stuff, &! The patients' mood is always included in a mental status report. Continue, or type END to exit and press RETURN.

You have already chosen mood and affect.

You are becoming a real pro! You are correct. Speech is simple to observe, and can supply you with very pertinent information. It is always included in your patient description. Continue, or type END to exit and press RETURN.

You have chosen to include speech before.

You are very thorough, but this point does not necessarily need to be included. You are only interested in supplying basic information to convey your impression of your patient. Try again, or type END to exit and press RETURN.

You have already included motor activity.

Miss Nelsons' behaviour is very informative. Although not always included in every Psychodynamic Formulation, in this case BEHAVIOUR is an important item to include. Good work, &! Continue on or type END to exit and press RETURN.

You have already chosen to include behaviour.

You have already included dress and grooming.
You are correct to include this, but it is not the most valid and reliable of data. Try again.

You have already chosen to try facial expression.

This is not one of the most important pieces of information to include. Choose again, or type END to exit and press RETURN.

You have previously included a description of POSTURE.

Remember, , you are to form a ONE line sentence for EACH of the areas to include in Miss Nelson's Mental Status Report. BE BRIEF!

Keep your sentence to only one line. The computer cannot read any more than that, and besides, you want your report to be brief and to the point.

You did not include a description of Miss Nelson's ATTITUDE. This is always included in a Mental Status Examination.

Your description of Miss Nelson's ATTITUDE may look like this: "Miss Nelson's attitude was overbearing and demanding." All that is required is enough data to portray your impression.

A description of the patients' MOOD AND AFFECT is always included in any mental status. It is important to include both topics so each can be validated by the other.

RIGHT! Your psychodynamic formulation always includes a general description of your patients' MOOD AND AFFECT. It is important to include both topics so each can be validated by the other.

SPEECH FORM, RATE, AND QUALITY are always included in a mental status report. They may be combined in 1 or 2 sentences. Above all - BE BRIEF!

As you may be aware, SPEECH FORM, RATE, AND QUALITY are always
included in a mental status report. Above all - be brief!

LABEL=B19END
GO S20/B20
TY & always include information on MOTOR ACTIVITY. It will supplement the other data you have gathered.

BR B20END
LABEL=B20
TY GOOD WORK! Your description of Miss Nelsons' MOTOR ACTIVITY will supplement the other data you have gathered.

LABEL=B20END
GO S21/B21
TY BEHAVIOUR may not be included in every mental status exam, but in this case it would have been helpful for assessment. To continue, please press RETURN.

EP
TY
BR B21END
LABEL=B21
TY Your description of Miss Nelsons' BEHAVIOUR will prove useful in the final assessment. Well done! To continue, please press RETURN.

EP
TY
LABEL=B21END
GO S22/B22
TY Your patients DRESS & GROOMING is helpful, but not of vital importance. It was O.K. NOT to include this item!

BR B22END
LABEL=B22
TY DRESS AND GROOMING is interesting, but not vital. However, you have made no error in including it.

LABEL=B22END
GO S23/B23
TY FACIAL EXPRESSION may or may not be included in your M.S.E. in this case, you have made a correct decision.

BR B23END
LABEL=B23
TY No error has been made in including FACIAL EXPRESSION, but it is not an essential element in this case.

LABEL=B23END
GO S24/B24
TY POSTURE is another element that is not vital to include in this situation. However, if you are ever in doubt, ALWAYS INCLUDE IT!
To continue, press RETURN.

EP
TY
BR B24END
LABEL=B24
TY You are quite right to include POSTURE in your report, but it is not a vital piece of data. Focus on those elements that are essential in portraying an image of your patient.
To continue, press RETURN.
The items to include in a report of GENERAL APPEARANCE & BEHAVIOUR and SPEECH depend on the patient you are assessing. If in doubt, ALWAYS include ALL items. When you are more comfortable with this skill, you can then choose the information most pertinent.

The following topics are ALWAYS included in ANY report:

1. ATTITUDE
2. MOOD
3. AFFECT
4. MOTOR ACTIVITY
5. SPEECH

CONGRATULATIONS, &. You have successfully completed a/B5 Computer Assisted Instruction patient simulation exercise on Mental Status Examination. You should now have some basic knowledge that will assist you in your next Mental Status Examination. To continue, press RETURN.

Your final summary may look something like this:

Currently, Miss Nelson presents as an overbearing and demanding woman who fluctuates easily between hostile anger and elation. On the ward, she seeks out areas of stimulation. She exhibits an increasing agitation which manifests itself in over-active behaviour, tremulousness and anxiety. She denies any agitation; "I feel great!". Miss Nelson is verbally abusive at times; her speech is disjointed, pressured and grandiose.

Each individual's report will appear different, but the basic information should be consistent. It will take time to develop your own style. Try to experiment, & to/B5 determine which format feels most comfortable to you.

To signoff the computer, press RETURN.

Thankyou for being part of this study! Please fill in the remaining survey and forward as soon as possible.

***If you would like to read the completed report, please let me know!

LABEL=END
APPENDIX C

Survey of Subject Characteristics
Survey of Subject Characteristics

Please answer the following questions in the space provided. The information will be used in establishing respondent characteristics.

1. What year did you graduate from nursing school? 

2. Are you Male or Female?
   - Male _____
   - Female _____

3. What is your educational background?
   - R.N. _____
   - R.P.N. _____
   - B.A. _____
   - B.S.N. _____
   - B.Sc.N. _____
   - M.S.N. _____
   - Other (explain) _____

4. How old are you?
   - 20 - 24 _____
   - 25 - 29 _____
   - 30 - 34 _____
   - 35 - 39 _____
   - 40 - 44 _____
   - 45 - 49 _____
   - > 50 _____
5. How long have you been working concurrently in Psychiatric Nursing?
   Less than 1 year
   1 year
   2 years
   3 years
   More than 3 years (How many?)

6. Have you ever been asked to do a Mental Status Examination?
   No
   Yes

7. Did you learn the fundamentals of a Mental Status Examination in nursing training or "on the job"?
   Never learned
   Nursing training
   "On the job"
   Prior mental status workshop
   Other (explain)

8. Have you ever taken any formal continuing education courses in nursing?
   No
   Yes

9. How familiar are you with a typewriter and/or computer terminal keyboard?
   Not familiar
   Fairly familiar
   Familiar
   Very familiar
   Know it well

10. Have you ever used a computer terminal before?
    No
    Yes

Coding column
Please do not write in this space.
APPENDIX D

Test of Mental Status Examination
Knowledge
Test of Mental Status Examination Knowledge

This package consists of the PRE-TEST OF MENTAL STATUS EXAMINATION KNOWLEDGE.

Following its completion, please send this pre-test to the Psychiatric Unit Nursing Office – c/o Sharon Kervin. You may then begin the learning module.

Your identity will be kept confidential via a numbered coding system. Your code will only be known to yourself and the principal investigator. A master list will be kept, but the information will not be given out. Following completion of the project, the list will be destroyed.

Thank you for being part of this study! Now, please turn the page for the PRE-TEST OF MENTAL STATUS EXAMINATION KNOWLEDGE.
Thank you for completing the first section of the pre-test.

Please answer the following questions regarding Mental Status Examination Knowledge.

A. Please answer the following question:

1. What is a Mental Status Examination?

B. Each question below contains five suggested answers. Circle the one best response to each question.

2. A Mental Status Examination can begin:
   
   (A) When a patient is first admitted
   (B) With observations made on your first meeting with your patient
   (C) When ordered by the ward psychiatrist
   (D) When the patient agrees to co-operate
   (E) After the new patient has had a few days to "settle in" to the ward

3. Choose the item that is not included in a Mental Status Examination:
   
   (A) An evaluation of your patients' sensorium
   (B) An evaluation of your patients' reasoning
   (C) An evaluation of your patients' intelligence
   (D) An evaluation of your patients' socialisation
   (E) An evaluation of your patients' judgement
4. A Mental Status Examination contains four elements. Which of the following is not included:

   (A) Observations
   (B) Current Mental signs
   (C) Prognosis
   (D) Symptoms
   (E) Functioning level

5. When you assess a patient's attitude, which one of the following descriptions apply best?

   (A) Appropriate
   (B) Belligerent
   (C) Bewildered
   (D) Preoccupied
   (E) Restless

6. Which of the following statements about assessing a patient's speech form is true?

   (A) It is the patient's speech features or properties
   (B) It can be exhibited by a stuttering and pressured speech
   (C) It is associated with the client's psychiatric functioning level
   (D) It is the arrangement and style of the speech pattern
   (E) Documentation of a patient's speech form is not necessary in a Mental Status Examination

C. Please mark the following statements TRUE or FALSE

   T     F

7. A mental status examination is a formal information-gathering session.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>3. The nurses' attitude and approach influences the patients' response</td>
<td></td>
</tr>
<tr>
<td>9. First impressions of a patient should be ignored until a therapeutic rapport is established</td>
<td></td>
</tr>
<tr>
<td>10. Assessing and/or observing a patients' general mood is always an initial part of a Mental Status Examination</td>
<td></td>
</tr>
<tr>
<td>11. An assessment of a patients' speech pattern focus on only form and quality</td>
<td></td>
</tr>
<tr>
<td>12. Cognitive testing is an integral part of every Mental Status Examination</td>
<td></td>
</tr>
<tr>
<td>13. Assessment of a patients' emotional state requires both subjective and objective data</td>
<td></td>
</tr>
<tr>
<td>14. A patient who displays verbigeration shows an abnormal repetition of meaningless phrases</td>
<td></td>
</tr>
<tr>
<td>15. The presence of hallucinations, delusions and feelings of unreality may indicate a disturbance in cognitive functioning</td>
<td></td>
</tr>
</tbody>
</table>

D. 16. Number and list the sections included in a complete Mental Status Examination.
E. Each of the following statements relates to a section assessed in a Mental Status Examination. Match the statement with the appropriate section you identified in the previous question E. 16

17. Includes observations of attitude, behaviour, condition of dress and grooming and posture
   Answer

18. Form, rate and quality
   Answer

19. Some topics in this item may require direct questioning
   Answer

20. Includes mood and affect
   Answer

21. A summary of your impressions
   Answer

22. Used for distinguishing O.B.S. and a functional psychiatric illness
   Answer

23. May uncover a formal thought disorder
   Answer

24. An assessment of the patients' delusions
   Answer

25. Motor Activity
   Answer

26. Includes subjective and objective data
   Answer
F. In the space provided to the left of each definition, write the number of the item which corresponds to the definition.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ANSWER</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.</td>
<td>Hallucination</td>
<td>Frequent repetition of an activity or verbal expression</td>
</tr>
<tr>
<td>28.</td>
<td>Thought blocking</td>
<td>Patient feels the world is against Him/Her</td>
</tr>
<tr>
<td>29.</td>
<td>Irritable</td>
<td>Patient repeats words or sentences spoken by someone else</td>
</tr>
<tr>
<td>30.</td>
<td>Suspicious</td>
<td>Expression consists of voluntary/involuntary frowning, scowling</td>
</tr>
<tr>
<td>31.</td>
<td>Grimacing</td>
<td>A stance or position maintained for an extended period of time</td>
</tr>
<tr>
<td>32.</td>
<td>Thought insertion</td>
<td>Automatic or unconscious actions</td>
</tr>
<tr>
<td>33.</td>
<td>Persecutory trends</td>
<td>Short-tempered, easily agitated, upset</td>
</tr>
<tr>
<td>34.</td>
<td>Blunted</td>
<td>A false perception without an external stimulus</td>
</tr>
<tr>
<td>35.</td>
<td>Paranoia</td>
<td>Dulled, an &quot;under&quot; response</td>
</tr>
<tr>
<td>36.</td>
<td>Automatisms</td>
<td>Attitude is one of distrust of others</td>
</tr>
<tr>
<td>37.</td>
<td>Stereotyped Posture</td>
<td>An unvarying form or fixed pattern of movement</td>
</tr>
<tr>
<td>38.</td>
<td>Symbolic posture</td>
<td>Patient experiences thoughts which are not his/her own intruding into his/her mind</td>
</tr>
<tr>
<td>39.</td>
<td>Echolative</td>
<td>Patient experiences a sudden stopping of his/her thoughts in the absence of anxiety</td>
</tr>
<tr>
<td>40.</td>
<td>Perseveration</td>
<td>A fixed delusional state, usually of a persecutory nature</td>
</tr>
</tbody>
</table>
APPENDIX E

Answer Guide to Test of Mental Status
Examination Knowledge
### QUESTION

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>ANSWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. 1.</td>
<td>observation, mental signs, symptoms, functioning level</td>
</tr>
<tr>
<td>B. 2.</td>
<td>B</td>
</tr>
<tr>
<td>B. 3.</td>
<td>D</td>
</tr>
<tr>
<td>B. 4.</td>
<td>C</td>
</tr>
<tr>
<td>B. 5.</td>
<td>B</td>
</tr>
<tr>
<td>B. 6.</td>
<td>D</td>
</tr>
<tr>
<td>C. 7.</td>
<td>F</td>
</tr>
<tr>
<td>C. 8.</td>
<td>T</td>
</tr>
<tr>
<td>C. 9.</td>
<td>F</td>
</tr>
<tr>
<td>C. 10.</td>
<td>T</td>
</tr>
<tr>
<td>C. 11.</td>
<td>F</td>
</tr>
<tr>
<td>C. 12.</td>
<td>F</td>
</tr>
<tr>
<td>C. 13.</td>
<td>T</td>
</tr>
<tr>
<td>C. 14.</td>
<td>T</td>
</tr>
<tr>
<td>C. 15.</td>
<td>F</td>
</tr>
<tr>
<td>D. 16.</td>
<td>General Appearance &amp; Behaviour</td>
</tr>
<tr>
<td></td>
<td>Speech</td>
</tr>
<tr>
<td></td>
<td>Emotional State</td>
</tr>
<tr>
<td></td>
<td>Thought Processes &amp; Content</td>
</tr>
<tr>
<td></td>
<td>Cognitive Functioning</td>
</tr>
<tr>
<td></td>
<td>Psychodynamic Formulation</td>
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<tr>
<td>E. 17.</td>
<td>General Appearance &amp; Behaviour</td>
</tr>
<tr>
<td>E. 18.</td>
<td>Speech</td>
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<td>E. 19.</td>
<td>Cognitive Functioning</td>
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<td>E. 20.</td>
<td>Emotional State</td>
</tr>
<tr>
<td>E. 21.</td>
<td>Psychodynamic Formulation</td>
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<tr>
<td>E. 22.</td>
<td>Cognitive Functioning</td>
</tr>
<tr>
<td>E. 23.</td>
<td>Thought Processes</td>
</tr>
<tr>
<td>E. 24.</td>
<td>Thought Processes</td>
</tr>
<tr>
<td>E. 25.</td>
<td>General Appearance &amp; Behaviour</td>
</tr>
<tr>
<td>E. 26.</td>
<td>Emotional State</td>
</tr>
<tr>
<td>F. 27.</td>
<td>40</td>
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<td>F. 28.</td>
<td>33</td>
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<tr>
<td>F. 29.</td>
<td>39</td>
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<tr>
<td>F. 30.</td>
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<td>F. 31.</td>
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<td>F. 32.</td>
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<td>F. 34.</td>
<td>27</td>
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<td>F. 35.</td>
<td>34</td>
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### SCORE (x/48)

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<td>A. 1.</td>
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<td>B. 2.</td>
<td>3=3</td>
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<td>B. 3.</td>
<td>2=2</td>
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<td>B. 4.</td>
<td>1=1</td>
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<td>B. 5.</td>
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<td>C. 7.</td>
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<td>C. 8.</td>
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</tr>
<tr>
<td>C. 9.</td>
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</tr>
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<td>C. 10.</td>
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</tr>
<tr>
<td>C. 11.</td>
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<tr>
<td>C. 12.</td>
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<tr>
<td>C. 13.</td>
<td>1</td>
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<td>C. 14.</td>
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</tr>
<tr>
<td>C. 15.</td>
<td>1</td>
</tr>
<tr>
<td>D. 16.</td>
<td>all 6=6</td>
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<tr>
<td>E. 17.</td>
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<td>E. 18.</td>
<td>1</td>
</tr>
<tr>
<td>E. 19.</td>
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</tr>
<tr>
<td>E. 20.</td>
<td>1</td>
</tr>
<tr>
<td>E. 21.</td>
<td>1</td>
</tr>
<tr>
<td>E. 22.</td>
<td>1</td>
</tr>
<tr>
<td>E. 23.</td>
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</tr>
<tr>
<td>E. 24.</td>
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<tr>
<td>E. 25.</td>
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<tr>
<td>E. 26.</td>
<td>1</td>
</tr>
<tr>
<td>F. 27.</td>
<td>1</td>
</tr>
<tr>
<td>F. 28.</td>
<td>1</td>
</tr>
<tr>
<td>F. 29.</td>
<td>1</td>
</tr>
<tr>
<td>F. 30.</td>
<td>1</td>
</tr>
<tr>
<td>F. 31.</td>
<td>1</td>
</tr>
<tr>
<td>F. 32.</td>
<td>1</td>
</tr>
<tr>
<td>F. 33.</td>
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<td>F. 34.</td>
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<tr>
<td>F. 35.</td>
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APPENDIX F

Pre-CAI Attitude Questionnaire
<table>
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<th>QUESTION</th>
<th>ANSWER</th>
<th>SCORE (x/48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F. cont'd.</td>
<td>36. 30</td>
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<tr>
<td></td>
<td>37. 37</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>38. 32</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>39. 28</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>40. 35</td>
<td>1</td>
</tr>
</tbody>
</table>
Pre-CAI Attitude Questionnaire

The following is an evaluation of your attitudes towards:

1. Computers

For each of the following statements, circle one of the descriptions below which most closely resembles your feelings.

SA = Strongly Agree
A = Agree
N = Neutral
D = Disagree
SD = Strongly Disagree

1. I feel comfortable in sitting down to a computer terminal
   SA A N D SD

2. Psychiatric skills can be practiced on a computer
   SA A N D SD

3. Dealing with a computer is dehumanizing
   SA A N D SD

4. Computer Assisted Instruction will be an important part of my continuing education in nursing
   SA A N D SD

5. I do not think that using a computer is the best way to practise a mental status examination
   SA A N D SD

6. It is easy to learn how to operate a computer
   SA A N D SD

7. Computers create more problems than they solve
   SA A N D SD

8. To practice a mental status examination, I would prefer role-playing with other people than a computer assisted instruction program
   SA A N D SD
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>Sitting down to a computer terminal makes me anxious</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>10.</td>
<td>The computer should be incorporated as a teaching tool in schools of nursing</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>11.</td>
<td>I support the use of computers in nursing</td>
<td>SA A N D SD</td>
</tr>
</tbody>
</table>
APPENDIX G

Post-CAI Attitude Questionnaire
Post-CAI Attitude Questionnaire

The following is an evaluation of your attitudes towards:

1. Computers
2. Computer Assisted Instruction in nursing
3. The Computer Assisted Instruction program on mental status examination.

For each of the following statements, circle one of the descriptions below which most closely resembles your feelings.

SA = Strongly Agree
A = Agree
N = Neutral
D = Disagree
SD = Strongly Disagree

<table>
<thead>
<tr>
<th>Statement</th>
<th>Coding Column</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel comfortable in sitting down to a computer terminal</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>2. My likes for this computer assisted instruction program outweigh my dislikes</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>3. Practicing a mental status examination on a computer is not very life-like</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>4. Psychiatric skills can be practiced on a computer</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>5. Dealing with a computer is dehumanizing</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>6. I would consider taking a nursing course taught via a computer and self-instructional learning module</td>
<td>SA A N D SD</td>
</tr>
<tr>
<td>7. Computer Assisted Instruction will be an important part of my continuing education in nursing</td>
<td>SA A N D SD</td>
</tr>
</tbody>
</table>
3. I do not think that using a computer is the best way to practice a mental status examination

9. I think learning via a computer-nurse-patient simulation is more difficult than learning via a role-play situation

10. It is easy to learn how to operate a computer

11. Computers create more problems than they solve

12. To practice a mental status examination, I would prefer role-playing with other people than computer-assisted instruction program

13. This computer program is not worth the time and effort it requires

14. Sitting down to a computer terminal makes me anxious

15. The computer should be incorporated as a teaching tool in schools of nursing

16. This computer-assisted instruction program offers helpful and informative feedback

17. I support the use of computers in nursing
APPENDIX H

Test of Mental Status Examination
Application Skill
Test of Mental Status Examination Application Skill

The following two simulation exercises will help evaluate your application of the information presented in the learning module. Only the first two sections of the mental status examination will be included; these are General Appearance and Behaviour and Speech.
To assist you in applying the information you have learned, the following example of a completed Mental Status Examination simulation exercise is included in this post-test. The focus is on the first two sections of a mental status examination. You may use this exercise as a guide to the other simulations.

From the following patient description, the significant information to include in a report on General Appearance and Behaviour and Speech will be presented in a table. This table is divided in two; the items assessed in General Appearance and Behaviour and Speech on the left, with the matching observation on the right.
Mrs. Jean Walters, 35, has been a patient in the in-patient psychiatric ward of a general hospital for 3 days. Since admission she has stayed in her room, except to attend meals. As her primary nurse, you have decided to conduct a Mental Status Examination.

You find your patient sitting slumped in a chair in her room. The lights are turned low and the curtains are drawn as if to shut out the sunny day. She is dressed in a pant-suit, but this is crumpled and stained. Her hair is tasseled and uncombed. She wears no jewelry or makeup. As you begin an informal conversation, Mrs. Walters continues to stare stright ahead. She responds slowly to you in a disinterested manner. Throughout the interaction, you are unable to observe any expression or affect. She is hesitant in her responses - most of these responses are only one or two short whispered words with a monotone quality. You are unable to gather much information from your patient. When you ask how she is feeling, her apathetic response is "Fine".

<table>
<thead>
<tr>
<th>General Appearance and Behaviour and Speech ITEMS</th>
<th>OBSERVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>indifferent</td>
</tr>
<tr>
<td>Behaviour</td>
<td>isolated in darkened room</td>
</tr>
<tr>
<td>Dress and grooming</td>
<td>disheveled, unkempt, unclean</td>
</tr>
<tr>
<td>Facial expression</td>
<td>disinterested, expressionless, stares straight ahead</td>
</tr>
<tr>
<td>General affect</td>
<td>blank, flat</td>
</tr>
<tr>
<td>General mood</td>
<td>apathetic &quot;Fine&quot;</td>
</tr>
<tr>
<td>Motor activity</td>
<td>(difficult to assess - not enough information)</td>
</tr>
<tr>
<td>Posture</td>
<td>slumped in chair</td>
</tr>
<tr>
<td>Speech form</td>
<td>monosyllabic, uncommunicative, hesitant</td>
</tr>
<tr>
<td>Speech quality</td>
<td>monotone, whispered</td>
</tr>
<tr>
<td>Speech rate</td>
<td>slowed</td>
</tr>
</tbody>
</table>

To conduct your own mental status examination, just turn the page!
Your first task is to conduct a mental status examination of a new patient that will be presented at an upcoming ward rounds. From the following description of Mr. Allen Sal, select the information that you wish to include in a complete report of your patients' General Appearance and Behaviour and Speech. Document this information in point form in the table provided.

Mr. Allen Sal (17 years old) has been a patient in the hospital psychiatric unit for 3 days. He has been admitted by his parents for "bizarre behaviour" and "staying in his room". While in hospital, Allen has been isolative, withdrawn and constantly questions his medication and treatment plan. So far, however, Allen has not displayed any "bizarre" behaviour. He does seem apprehensive and suspicious and can usually be found sitting on the edge of his bed. During your interview, he begins to tremble and appears fearful. Eye contact is poor - and is getting worse. He appears somewhat bewildered and thoughtful, but states he is "fine". During the meeting, you observe Allen's speech is hesitant - almost uncommunicative. He mumbles somewhat, and at times his speech is hostile and abusive. He speaks slowly, and sounds strained. Since admission, Allen's appearance has been dishevelled and sloppy.

You have now gathered significant data to include in your psycho-dynamic formulation. Please make a table of this information; include all of the items assessed in both General Appearance and Behaviour and Speech on the left, with the matching observation/data on the right.

<table>
<thead>
<tr>
<th>General Appearance and Behaviour and Speech</th>
<th>ITEMS</th>
<th>OBSERVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Miss Emily Henderson has just been admitted to the in-patient unit. She is 62 years of age and complains of increasing forgetfulness and difficulty concentrating. She is quite anxious and fearful, and requires much reassurance. It is your task to do a mental status examination on Miss Henderson. You will be gathering data on her GENERAL APPEARANCE AND BEHAVIOUR and SPEECH.

You find Miss Henderson in her room. She is sitting rigidly on the edge of her bed — wringing her hands. You observe that she is neatly dressed and her grooming is tidy. During the conversation, she appears fearful and anxious. Miss Henderson admits to much anxiety and fear about her condition. "This has been going on for a couple of years now. I don't know what's wrong. Why — last week I couldn't find my way home from the grocery store! I've lived in the same house for over 40 years!" During your meeting, Miss Henderson looks bewildered and confused. At times she appears sad. Despite her anxiety, she is co-operative and friendly.

Miss Henderson's anxiety becomes more marked as the interview progresses. This is exhibited via her hand wringing (becoming more frequent and pronounced) and her speech. Throughout the 20 minute meeting, Miss Henderson jumps from topic to topic; her statements are circumstantial, rambling and irrelevant — you wonder if some of her stories are confabulations. She is quite verbose, and her speech is rapid.

You have gathered some important information regarding Miss Henderson. Using this information, please make two lists: 1) Items to be included in your report on the left, and 2) the accompanying observation on the right.

<table>
<thead>
<tr>
<th>General Appearance and Behaviour and Speech</th>
<th>ITEMS</th>
<th>OBSERVATION</th>
</tr>
</thead>
</table>

1. Miss Henderson is neatly dressed and her grooming is tidy.
2. Miss Henderson is sitting rigidly on the edge of her bed — wringing her hands.
3. Miss Henderson's anxiety becomes more marked as the interview progresses.
4. Miss Henderson jumps from topic to topic; her statements are circumstantial, rambling and irrelevant.
5. Miss Henderson is quite verbose, and her speech is rapid.
6. Miss Henderson admits to much anxiety and fear about her condition.
Please use the preceding information in a psychodynamic formulation of Miss Henderson's General Appearance and Behaviour and Speech. Include only those items you feel are most relevant. Be sure to keep your summary short and concise.

PSYCHODYNAMIC FORMULATION:
APPENDIX I

Answer Guide to Test of Mental Status Examination Application Skill
<table>
<thead>
<tr>
<th>ITEMS</th>
<th>OBSERVATIONS</th>
<th>SCORE (x/25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>apprehensive, suspicious</td>
<td>2</td>
</tr>
<tr>
<td>Behaviour</td>
<td>withdrawn, questioning, isolative, keeps to self, no bizarre behaviour noted</td>
<td>5</td>
</tr>
<tr>
<td>Condition of Dress and Grooming</td>
<td>dishevelled, sloppy</td>
<td>2</td>
</tr>
<tr>
<td>Facial Expression</td>
<td>apprehensive, fearful, suspicious, poor eyecontact, anxious</td>
<td>5</td>
</tr>
<tr>
<td>General Affect</td>
<td>bewildered, thoughtful</td>
<td>2</td>
</tr>
<tr>
<td>General Mood</td>
<td>states he is &quot;fine&quot;</td>
<td>1</td>
</tr>
<tr>
<td>Motor Activity</td>
<td>trembles</td>
<td>1</td>
</tr>
<tr>
<td>Posture</td>
<td>sits on edge of bed</td>
<td>1</td>
</tr>
<tr>
<td>Speech Quality</td>
<td>abusive, stumbles</td>
<td>2</td>
</tr>
<tr>
<td>Speech Form</td>
<td>hesitant, uncommunicative</td>
<td>2</td>
</tr>
<tr>
<td>Speech Rate</td>
<td>slow, strained</td>
<td>2</td>
</tr>
</tbody>
</table>
### Answer Guide to Test of Mental Status Examination Application Skill

#### Simulation Number Two

<table>
<thead>
<tr>
<th>Items</th>
<th>Observations</th>
<th>Score (x/29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>cooperative, friendly</td>
<td>2</td>
</tr>
<tr>
<td>Behaviour</td>
<td>anything included in simulation #2</td>
<td>1</td>
</tr>
<tr>
<td>Condition of Dress and Grooming</td>
<td>neat, tidy</td>
<td>2</td>
</tr>
<tr>
<td>Facial Expression</td>
<td>fearful, anxious</td>
<td>2</td>
</tr>
<tr>
<td>General Affect</td>
<td>bewildered, confused, sad, fearful, anxious</td>
<td>5</td>
</tr>
<tr>
<td>General Mood</td>
<td>admits to anxiety and fear</td>
<td>2</td>
</tr>
<tr>
<td>Motor Activity</td>
<td>hand-wringer</td>
<td>1</td>
</tr>
<tr>
<td>Posture</td>
<td>sitting on edge of bed, rigid</td>
<td>2</td>
</tr>
<tr>
<td>Speech Quality</td>
<td>verbose</td>
<td>1</td>
</tr>
<tr>
<td>Speech Form</td>
<td>circumstantial, rambling, irrelevant, confabulating, flight of ideas</td>
<td>5</td>
</tr>
<tr>
<td>Speech Rate</td>
<td>rapid</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note:** If subject was able to pair observation with appropriate item, then he/she could attain a possible 5 marks. One mark was deducted for each inaccurate pairing.
The summary must include the following five mental status examination items:

- GENERAL MOOD
- GENERAL AFFECT
- ATTITUDE
- BEHAVIOUR
- SPEECH QUALITY, FORM, OR RATE

For a score of x/5
APPENDIX J

Follow-up Interview
FOLLOW-UP INTERVIEW

1. WHAT DID YOU FIND MOST USEFUL?

2. WHAT DID YOU FIND LEAST USEFUL?

3. HOW APPLICABLE IS THIS EXPERIENCE TO YOUR WORK?
   - ON A SCALE OF 0 to 10

4. DO YOU FEEL MORE COMFORTABLE IN DOING A MENTAL STATUS EXAMINATION? WHY?

5. ADDITIONAL COMMENTS:
APPENDIX K

Frequencies of Subjects' Responses to Pre and Post-CAI Attitude Questionnaire
<table>
<thead>
<tr>
<th>Statement</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-CAI</td>
</tr>
<tr>
<td>I feel comfortable in sitting down to a computer terminal</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 4</td>
</tr>
<tr>
<td></td>
<td>N = 2</td>
</tr>
<tr>
<td></td>
<td>D = 3</td>
</tr>
<tr>
<td></td>
<td>SD = 2</td>
</tr>
<tr>
<td>Sitting down to a computer terminal makes me anxious</td>
<td>SA = 2</td>
</tr>
<tr>
<td></td>
<td>A = 5</td>
</tr>
<tr>
<td></td>
<td>N = 1</td>
</tr>
<tr>
<td></td>
<td>D = 3</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
</tr>
<tr>
<td>It is easy to learn how to operate a computer</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 2</td>
</tr>
<tr>
<td></td>
<td>N = 5</td>
</tr>
<tr>
<td></td>
<td>D = 4</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
</tr>
<tr>
<td>Dealing with a computer is dehumanizing</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 1</td>
</tr>
<tr>
<td></td>
<td>N = 1</td>
</tr>
<tr>
<td></td>
<td>D = 8</td>
</tr>
<tr>
<td></td>
<td>SD = 1</td>
</tr>
<tr>
<td>Computers create more problems than they solve</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 0</td>
</tr>
<tr>
<td></td>
<td>N = 4</td>
</tr>
<tr>
<td></td>
<td>D = 6</td>
</tr>
<tr>
<td></td>
<td>SD = 1</td>
</tr>
<tr>
<td>I support the use of computers in nursing</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 8</td>
</tr>
<tr>
<td></td>
<td>N = 3</td>
</tr>
<tr>
<td></td>
<td>D = 0</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
</tr>
</tbody>
</table>
### Frequencies of Subjects' Responses to Pre and Post-CAI Attitude Questionnaire

#### Attitudes towards CAI in nursing

<table>
<thead>
<tr>
<th>Statement</th>
<th>Pre-CAI</th>
<th>Post-CAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatric nursing skills can be practised on a computer</td>
<td>SA = 0</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 10</td>
<td>A = 10</td>
</tr>
<tr>
<td></td>
<td>N = 1</td>
<td>N = 1</td>
</tr>
<tr>
<td></td>
<td>D = 0</td>
<td>D = 0</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
<td>SD = 0</td>
</tr>
<tr>
<td>This computer should be incorporated as a teaching tool in schools of nursing</td>
<td>SA = 0</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 8</td>
<td>A = 9</td>
</tr>
<tr>
<td></td>
<td>N = 3</td>
<td>N = 2</td>
</tr>
<tr>
<td></td>
<td>D = 0</td>
<td>D = 0</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
<td>SD = 0</td>
</tr>
<tr>
<td>Computer assisted instruction will be an important part of my continuing education in nursing</td>
<td>SA = 0</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 5</td>
<td>A = 4</td>
</tr>
<tr>
<td></td>
<td>N = 5</td>
<td>N = 7</td>
</tr>
<tr>
<td></td>
<td>D = 1</td>
<td>D = 0</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
<td>SD = 0</td>
</tr>
<tr>
<td>I would consider taking a nursing course taught via a computer and self-instructional learning module</td>
<td>SA = 0</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 7</td>
<td>A = 3</td>
</tr>
<tr>
<td></td>
<td>N = 2</td>
<td>N = 5</td>
</tr>
<tr>
<td></td>
<td>D = 2</td>
<td>D = 3</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
<td>SD = 0</td>
</tr>
</tbody>
</table>

#### Attitudes towards the CAI simulation exercise

<table>
<thead>
<tr>
<th>Statement</th>
<th>Pre-CAI</th>
<th>Post-CAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>To practice a mental status examination, I would prefer role-playing with other people than a computer assisted instruction program</td>
<td>SA = 1</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 2</td>
<td>A = 4</td>
</tr>
<tr>
<td></td>
<td>N = 4</td>
<td>N = 3</td>
</tr>
<tr>
<td></td>
<td>D = 3</td>
<td>D = 2</td>
</tr>
<tr>
<td></td>
<td>SD = 1</td>
<td>SD = 2</td>
</tr>
<tr>
<td>I do not think that using a computer is the best way to practice a mental status examination</td>
<td>SA = 0</td>
<td>SA = 0</td>
</tr>
<tr>
<td></td>
<td>A = 3</td>
<td>A = 3</td>
</tr>
<tr>
<td></td>
<td>N = 6</td>
<td>N = 5</td>
</tr>
<tr>
<td></td>
<td>D = 2</td>
<td>D = 3</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
<td>SD = 0</td>
</tr>
</tbody>
</table>
Frequencies of Subjects' Responses to Pre and Post-CAI Attitude Questionnaire

<table>
<thead>
<tr>
<th>Statement</th>
<th>Pre-CAI</th>
<th>Post-CAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes towards the CAI simulation exercise, cont.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think learning via a computer nurse-patient simulation is more difficult</td>
<td>SA = 0</td>
<td>A = 6</td>
</tr>
<tr>
<td>than learning via a role-play situation</td>
<td>N = 1</td>
<td>D = 3</td>
</tr>
<tr>
<td></td>
<td>SD = 1</td>
<td></td>
</tr>
<tr>
<td>My likes for this computer assisted instruction program outweigh my dislikes</td>
<td>SA = 1</td>
<td>A = 8</td>
</tr>
<tr>
<td></td>
<td>N = 0</td>
<td>D = 2</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
<td></td>
</tr>
<tr>
<td>This computer program is not worth the time and effort it requires</td>
<td>SA = 0</td>
<td>A = 0</td>
</tr>
<tr>
<td></td>
<td>N = 2</td>
<td>D = 4</td>
</tr>
<tr>
<td></td>
<td>SD = 5</td>
<td></td>
</tr>
<tr>
<td>Practicing a mental status examination on a computer is not very life-like</td>
<td>SA = 0</td>
<td>A = 5</td>
</tr>
<tr>
<td></td>
<td>N = 0</td>
<td>D = 5</td>
</tr>
<tr>
<td></td>
<td>SD = 1</td>
<td></td>
</tr>
<tr>
<td>This computer assisted instruction program offers helpful and informative feedback</td>
<td>SA = 2</td>
<td>A = 8</td>
</tr>
<tr>
<td></td>
<td>N = 1</td>
<td>D = 0</td>
</tr>
<tr>
<td></td>
<td>SD = 0</td>
<td></td>
</tr>
</tbody>
</table>

Note: Those statements with only a post-CAI response were not included on the pre-CAI attitude questionnaire. CAI = Computer assisted instruction.

a SA = Strongly agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree
APPENDIX L

Subject Responses to Follow-up Interview
### Subject Responses to Follow-up Interview

<table>
<thead>
<tr>
<th>Question</th>
<th>Response⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What did you find most useful?</td>
<td>- learning module (10)</td>
</tr>
<tr>
<td></td>
<td>- immediate feedback of CAI program (4)</td>
</tr>
<tr>
<td></td>
<td>- CAI program (2)</td>
</tr>
<tr>
<td></td>
<td>- glossary in learning module (1)</td>
</tr>
<tr>
<td></td>
<td>- questions in learning module (1)</td>
</tr>
<tr>
<td>2. What did you find least useful?</td>
<td>- nothing (4)</td>
</tr>
<tr>
<td></td>
<td>- CAI program (4)</td>
</tr>
<tr>
<td></td>
<td>- pre and posttests (4)</td>
</tr>
<tr>
<td>3. On a scale of 0 to 10, has this been applicable to your work?</td>
<td>- yes (11); Scale measure of: 7(1)</td>
</tr>
<tr>
<td></td>
<td>8(1)</td>
</tr>
<tr>
<td></td>
<td>9(2)</td>
</tr>
<tr>
<td></td>
<td>10(7)</td>
</tr>
<tr>
<td>4. Do you feel more comfortable in doing a mental status examination? Why?</td>
<td>- yes (11); Reasons:</td>
</tr>
<tr>
<td></td>
<td>- a good review (4)</td>
</tr>
<tr>
<td></td>
<td>- I am more concise (3)</td>
</tr>
<tr>
<td></td>
<td>- I am more confident (1)</td>
</tr>
<tr>
<td></td>
<td>- I understood more (2)</td>
</tr>
<tr>
<td></td>
<td>- I have new knowledge (1)</td>
</tr>
<tr>
<td></td>
<td>- I am more organized (2)</td>
</tr>
<tr>
<td></td>
<td>- I am more aware of informal examination techniques (1)</td>
</tr>
<tr>
<td>5. Additional comments?</td>
<td>- CAI was fun (2)</td>
</tr>
<tr>
<td></td>
<td>- CAI should be more interactive (2)</td>
</tr>
<tr>
<td></td>
<td>- It was difficult to think—I was doing three things at once (2)</td>
</tr>
<tr>
<td></td>
<td>- I was too anxious (2)</td>
</tr>
<tr>
<td></td>
<td>- Computers are useful for independent study (2)</td>
</tr>
<tr>
<td></td>
<td>- Interviewing a real patient is best (1)</td>
</tr>
<tr>
<td></td>
<td>- With more experience, I would enjoy CAI (2)</td>
</tr>
<tr>
<td></td>
<td>- I liked the feedback (2)</td>
</tr>
</tbody>
</table>

**Note:** Responses total more than 11 because subjects could have more than one response.

⁴ Numbers in parentheses indicate the number of subjects who made each response.
APPENDIX M

Comparison of Subjects' CAI Completion Times and Typewriter/Computer Keyboard Familiarity
Comparison of Subjects' Computer Assisted Instruction Completion Times and Typewriter/Computer Keyboard Familiarity

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Completion Timea</th>
<th>Typewriter/Computer Keyboard Familiarityb</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>02</td>
<td>26</td>
<td>3</td>
</tr>
<tr>
<td>03</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>04</td>
<td>33</td>
<td>2</td>
</tr>
<tr>
<td>06</td>
<td>33</td>
<td>1</td>
</tr>
<tr>
<td>07</td>
<td>32</td>
<td>1</td>
</tr>
<tr>
<td>08</td>
<td>48</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>34</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>33</td>
<td>2</td>
</tr>
</tbody>
</table>

a Completion time is in minutes.

b 0 = not familiar; 1 = fairly familiar; 2 = familiar; 3 = very familiar.